Linzer biol. Beitr.	41/1	397-426	30.8.2009

On the Western Palaearctic and Middle Asian species of *Ochthephilum* STEPHENS, with notes on *Cryptobium koltzei* EPPELSHEIM (Coleoptera: Staphylinidae: Paederinae: Cryptobiina)

V. ASSING

A b s t r a c t : Types and additional material of the Western Palaearctic and Middle Asian representatives of *Ochthephilum* STEPHENS 1829 are revised. *Ochthephilum permutatum* nov.sp. (Azerbaijan), a species previously confounded with *O. egregium* (REITTER 1884), and *O. brevispinosum* nov.sp. (Kyrgyzstan) are described and illustrated. The shapes and intraspecific variation of the aedeagus and its internal structures of the Western Palaearctic and Middle Asian species are studied and illustrated. *Cryptobium algiricum* FAGEL 1967, nov.syn., is placed in synonymy with *Ochthephilum brevipenne* (MULSANT & REY 1861). Lectotypes are designated for *Cryptobium collare* REITTER 1884, *C. egregium* REITTER 1884, and *C. brevipenne* MULSANT & REY 1861. The distributions of the Western Palaearctic species are discussed and additional records are reported, among them several new country records. Based on full-year field studies (pitfall traps, soil extractions) in northern Germany, data on the life cycle of *O. fracticorne* (PAYKULL 1800) – including the seasonal activity and seasonal density of males and females, sex ratios, the phenology of larvae, and oviposition – are presented and illustrated. The species is wing-dimorphic, but the macropterous morph is distinctly rarer and only fully winged females have been found so far. Catalogues of the *Ochthephilum* species of the Western Palaearctic region including Middle Asia and of Turkey, as well as a key to species are provided. The revised distributions of nine species are mapped. *Cryptobium koltzei* EPPELSHEIM 1886, previously in *Ochthephilum*, is moved to the genus *Homaeotarsus* HOCHHUTH 1851 and the binomen *Homaeotarsus koltzei* (EPPELSHEIM), nov.comb., is established; the male primary and secondary sexual characters of the species are figured. *Homaeotarsus denticulatus* nov.sp. (NW-China), a species previously confounded with *H. koltzei*, is described and illustrated.

K e y w o r d s : Coleoptera, Staphylinidae, Paederinae, *Ochthephilum*, *Homaeotarsus*, Western Palaearctic region, Middle Asia, taxonomy, new species, new synonymy, new combination, lectotype designation, distribution, new records, catalogue of species, key to species, intraspecific variation, seasonal activity, seasonal density, sex ratio, sex-related wing dimorphism, bionomics.

1. Introduction

The paederine subtribe Cryptobiina is represented in the Palaearctic region by eight genera (ASSING 2008a, SMETANA 2004). The – by far – most speciose genus is

Ochthephilum STEPHENS 1829, a senior synonym of *Cryptobium* MANNERHEIM. However, many of the Eastern Palaearctic representatives currently attributed to this genus have not been revised and may in fact refer to other cryptobiine genera.

Although numerous species from various zoogeographic regions are currently attributed to *Ochthephilum*, the genus probably has a Holarctic distribution. So far, all the revised species from other regions have proved to refer to different genera of Cryptobiina. According to SMETANA (2004), *Ochthephilum* is represented in the Palaearctic region by 39 species, one of which was synonymised by ASSING (2008b). Five additional species were recently described from Japan and southern Anatolia (ASSING in press; ITO 2008; WATANABE 2008). However, the species described by WATANABE (2008) clearly refers to a different genus, as can be inferred from the illustrations of the habitus and the male genitalia, as well as from the details indicated in the original description. Eleven species were previously known from the Western Palaearctic and Middle Asia; four of them have been reported from Turkey.

Ochthephilum species are subject to considerable intraspecific variation of external characters, particularly of the coloration and of the length of the elytra, both of which were used as distinguishing characters even in the most recent key to the Western Palaearctic representatives of the genus (HOZMAN 1985). At the same time, the male primary and secondary sexual characters of most species are remarkably uniform. As a consequence, several species had been confounded under the name *O. fracticorne* (PAYKULL 1800) until ZANETTI (1980) and HOZMAN (1985) systematically studied the internal structures of the aedeagus of some Western Palaearctic species. As a consequence, records of *O. fracticorne* and several other species prior to 1980, as well as most records not based on an examination of the internal structures of the aedeagus are unreliable and the true distributions of these species are evidently less extensive than suggested by SMETANA (2004).

An examination of the type material of some species in the context of a study of the *Ochthephilum* fauna of Turkey revealed that *O. egregium* (REITTER 1884) had been misinterpreted by previous authors and that *O. egregium* sensu ZANETTI (1980) and HOZMAN (1985) refers to an undescribed species. In order to clarify the status of *O. egregium*, *O. collare* (REITTER 1884), *O. besucheti* (BORDONI 1980), and other species, the shapes and variability of the internal structures, evidently the only reliable characters for the identification and differentiation of most Western Palaearctic *Ochthephilum* species, were studied.

2. Material and methods

The material referred to in this study is deposited in the following public institutions and private collections:

HNHM ..... Hungarian Natural History Museum, Budapest (Gy. Makranczy)
IRSNB..... Institut royal des Sciences naturelles de Belgique, Bruxelles (Y. Gérard)
MHNG ..... Muséum d'Histoire Naturelle, Genève (G. Cuccodoro)
MHNL..... Museum d'Histoire Naturelle, Lyon (J. Clary, H. Labrique)
NHMW ..... Naturhistorisches Museum Wien (H. Schillhammer)
NSMNH..... Nova Scotia Museum of Natural History (C. Majka)

cAss..... author´s private collection
cFel ..... private collection Benedikt Feldmann, Münster
cSch..... private collection Michael Schülke, Berlin
cTro..... private collection Marc Tronquet, Molitg-les-Bains
cWun..... private collection Paul Wunderle, Mönchengladbach
cZan ..... private collection Adriano Zanetti, Verona

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). For the photographs a digital camera (Nikon Coolpix 995) was used.

The maps were generated using the online generic mapping tool (GMT) of the Geomar website at www.aquarius.ifm-geomar.de/omc.

Elytral length was measured at the suture from the apex of the scutellum to the posterior margin of the elytra.

The data on the seasonal activity and seasonal density are based on several full-year pitfall trap studies in various heathlands in northern Germany. For more details regarding the sampling plots and the methods see ASSING (1993).

3. The Western Palaearctic and Middle Asian *Ochthephilum* species

D i v e r s i t y a n d d i s t r i b u t i o n : The genus is represented in the Western Palaearctic (including Iran) by nine, and in Middle Asia by three described species, with *O. turkestanicum* distributed in both regions. One of the species recorded from the Western Palaearctic, *O. fracticorne*, is a Siberian or possibly a Holarctic element and has a trans-Palaearctic distribution; it may be present also in Middle Asia, but confirmed records are unknown. Except for *O. egregium* (Azerbaijan) and *O. hamatum* (SW-Anatolia), the Western Palaearctic species are more or less widespread and represent different distribution types: Holo-Mediterranean (*O. brevipenne*), Atlanto-Mediterranean (*O. jacquelinii*), Ponto-Mediterranean (*O. collare*), and Caspian (*O. besucheti*, *O. permutatum*, possibly also *O. egregium*). However, since only few records of the latter three species have become known, more data are needed to decide if they are Caspian or Iranian elements.

B i o n o m i c s : *Ochthephilum* species are generally hygrophilous. They are found in habitats such as moist forests, floodplains, swamps, bogs, near running and standing water, in various kinds of moist grassland (meadows, pastures, etc.), coastal habitats, inland saline localities, and pits. On various occasions, two species have been observed to occur syntopically in regions where they are sympatric (e. g., *O. jacquelinii* and *O. brevipenne*, *O. collare* and *O. brevipenne*, *O. collare* and *O. turkestanicum*, *O. turkestanicum* and *O. egregium*, *O. turkestanicum* and *O. hamatum*, *O. collare* and *O. fracticorne*). *Ochthephilum collare* and *O. fracticorne*, two of the most widespread species, are ecologically distinctly segregated in the north of Central Europe, whereas in the south of Central Europe and in northern Italy, both species have been collected in the same localities.

For details regarding the life-cycle see the section on *O. fracticorne*.

***Ochthephilum collare* (REITTER 1884)** (Figs 1-7, 14-19, Map 1)

Cryptobium fracticorne collare REITTER 1884: 84.

Type material examined: Lectotype ♂, present designation: "Dalmatien, Knin, Reitter 79. / coll. Reitter / Holotypus 1884, Cryptobium fractic. v. collare Reitter [curator label] / fracticorne v. collare m. / Cryptobium fracticorne (Reitt) [sic] (bona species), det. A. Zanetti 1978 / Cryptobium collare (Reitt.) ♂, Gusarov det. 1991 / Lectotypus ♂ *Cryptobium collare* Reitter, desig. V. Assing 2008 / Ochthephilum collare (Reitter) det. V. Assing" (HNHM).

Additional material examined: Sweden: 1♂, Öland, Grankullavik, 30.XII.1977, leg. Andersson (cZan); 1♂, Skåne, Skanör, 3.III.1978, leg. Baranowski (cZan). France: 1♂, Corsica, Forêt de Valdo-Niello, 1.VII.1976, leg. Sette (cZan); 8 exs. [partly teneral], Corsica, Bastia, Stagno di Biguglia, 3.VIII.1978, leg. Sette (cZan, cAss). Italy: 6 exs., Trentino-Alto Adige, Lago di Caldaro (BZ), caricetum, 21.IV.1992, leg. Zanetti (cZan); 1♂, Trentino-Alto Adige, Pergine (TN), Lago Pudro, pitfall, VII.1989, leg. Perini (cZan); 5 exs., Folgaria (TN), Biotopo Ecchen, 15.IX.1992, leg. Zanetti (cZan, cAss); 1♂, Lombardia, Somaggia (SO), 18.XI.1973, leg. Dioli (cZan); 1♂, 1♀, Veneto, Belluno, Antole, 4.IV.1994, leg. Zanetti (cZan); 1♀, Lombardia, Lago di Como, Mte. Bisbino, V.-VI.1908, leg. Leonhard (NHMW); 1♂, Veneto, Follina (TV), 12.IV.1979, leg. Minelli (cZan); 1♂, Toscana, Grosseto, Gavorrano-Filare, IV.1991, leg. Starke (cAss); 1♂, Toscana, Rignano sull'Arno, V.1974, leg. Castellini (cTro); 1♀, Rignano sull'Arno, 29.IX.1973, leg. Castellini (cTro); 1♂, 3♀♀, Toscana, Padule di Fucecchio, leg. Castellini (cTro); 1♂, Emilia, Tremozzo (PC), 3.V.1996, leg. Diotti (cWun); 6 exs., Umbria, Sigillo (PU), 17.XI.1974, leg. Rossi (cZan, cAss); 3 exs., Abruzzi, Rocca di Mezzo (AQ), Piami di Pezza, 23.III.1974, leg. Rossi (cZan); 1♂ [teneral], Lazio, Roma, Casale Bufalotta, 29.VI.1974, leg. Rossi (cZan); 2♂♂, 16♀♀, Roma, Castel Porziano, 25.III.1976, leg. Rossi (cZan); 1♂, same data, but 19.VI.1975 (cZan); 1♂, Roma, Via Salaria, km 29.3, Colle del Forno, 5.II.1974, leg. Rossi (cZan); 5♂♂, 1♀, Puglia, Lato river, 10 km from estuary (TA), 2.I.1977, leg. Angelini (cZan); 3♂♂, Puglia, San Cataldo (LE), riserva WWF Le Cesine, VII.1995, leg. Angelini (cWun, cAss); 1♂, Calabria, Scalea, 25.VII.1973, leg. Pace (cZan). Germany: 1♀, Schleswig-Holstein, Insel Fehmarn, Westermarkelsdorf, 1.IV.1995, leg. Siede (cAss); 1♂, 1♀, Insel Fehmarn, 7.-8.IX.1986, leg. Wunderle (cWun); 1♂, Mecklenburg-Vorpommern, Insel Hiddensee, 24.IV.1993, leg. Assing (cAss); 1♂, Niedersachsen, Hannover-Misburg, clay pit, 21.IX.1989, leg. Assing (cAss); 1♀, Sachsen-Anhalt, Halle, Landkr. Merseburg, Bündorf, salt meadows, VI.1996, leg. Sprick (cAss); 1♀, Sachsen-Anhalt, Aseleben, Salziger See, 51°29'N, 11°41'E, 100 m, shore of salt lake, 26.V.2001, leg. Assing (cAss); 1♂, 1♀, same locality, but 30.V.1998, leg. Schülke (cSch); 2♀♀, same locality, but 22.IV.2000, leg. Schülke (cSch); 1♂, Berlin (NHMW); 1♂, Hessen, locality not specified, 28.VIII.1902, leg. Janson (NHMW); 1♀, Thüringen, Bad Frankenhausen, Esperstedter Ried, 27.V.2001, leg. Assing (cAss); 1♀, Thüringen, locality not specified, 11.V.1902 (NHMW); 1♂, 1♀, Baden-Württemberg, Stuttgart, 17.IV.1876[?], leg. Simon (NHMW); 11 exs., Bayern, Erlangen (NHMW). Switzerland: 1♀, Luzern, Sonntagberg near Luzern, leg. Bänninger (NHMW); 3 exs., Valais, Sierre ["Siders"], leg. Simon (NHMW, cAss). Austria: Oberösterreich: 1♀, Steyr env., leg. Petz (NHMW); 1♀, Grünburg, leg. Bernhauer (NHMW). Niederösterreich / Wien: 10 exs., Enzersdorf, bank of Donau river, leg. Luze (NHMW, cAss); 4♀♀, Gars [48°35'N, 15°39'E], leg. Minarz (NHMW); 1♀, Wachau, leg. Minarz (NHMW); 1♀, Göstling an der Ybbs, leg. Franz (NHMW); 2♀♀, Wien env., leg. Lackner (NHMW); 1♂, Rodaun, leg. Scheerpeltz (NHMW); 1♀, Wiener Neudorf, leg. Scheerpeltz (NHMW); 2♀♀, Stockerau, 22.IX.1895 (NHMW); 1♀, Greifenstein, 7.IV.1895 (NHMW). Steiermark: 1♂, Bezirk Feldbach, Retther, ponds, 300 m, 14.III.1998, leg. Holzer (cAss). Burgenland: 3♀♀, St. Andrä, Zicksee, 29.V.1950, leg. Mandl (NHMW); 1♂, Neusiedlerseegebiet, Fuchslochlacke, 23.VIII.1985, leg. Assing (cAss); 1♂, Neusiedlerseegebiet, Schrändlsee, 22.VIII.1985, leg. Assing (cAss); 2♂♂, 1♀, Neusiedl am See, 31.III.-2.IV.1923, leg. Scheerpeltz (NHMW, cAss); 1♀, Neusiedl, lakeshore, leg. Scheerpeltz (NHMW); 1 ex., Illmitz (NHMW); 1♀, Neusiedersee, Podersdorf, flood debris, 7.IV.1991, leg. Sprick (cAss); 2 exs., Podersdorf, V.1931, leg. Prock (NHMW); 8 exs., Zurndorf, leg. Franz (NHMW); 1♂, Neusiedlersee, northern lakeshore, leg. Scheerpeltz (NHMW); 2♂♂, Neusiedlersee, 15.VIII.1958, leg. Mandl (NHMW, cAss); 25 exs., Neusiedlersee, leg. Franz, Ganglbauer, Hoffmann, Schuster, etc. (NHMW). Czech Republic: 1♂, 2♀♀, Paskov, 1879, leg. Reitter (NHMW); 1♂, 1♀, Praha, leg. Skalitzky (NHMW, cAss); 10 exs., Brandýs n. L., leg. Skalitzky, Roth (NHMW, cAss); 1♀, Dvorce ["Hof"], leg. Scheerpeltz (NHMW); 3♀♀, Úsov ["Mähr-Auss."/"Aussee"], leg. Wingelmüller (NHMW); 1♀, Prostějov, leg. Zoufal (NHMW). Polish or Czech territory: 4 exs., "Silesia", leg. v. Bodemeyer (NHMW). Slovakia: 1♀, Bratislava, leg. Zoufal (NHMW). Hungary:

1♂, 1♀, Neusiedlersee (NHMW); 1♀, Bugac National Park, grassland, pitfall, 28.IV.1981, leg. Gallé (cAss); 2♀♀, Pécs, leg. Kaufmann (NHMW). Romania: 1♀, Sibiu (NHMW). Slovenia: 1♂, 1♀, Maribor, leg. Lang (NHMW); 3♂♂, 3♀♀, "Süd-Steiermark" (NHMW). Croatia: 2 exs., Čovići, 2.V.1990, leg. Wunderle (cWun); 1♂, nature reserve Plitvice, 1.V.1990, leg. Wunderle (cWun); 1♂, Krk island, 1879, leg. Reitter (NHMW). Yugoslavia: 3 exs., Montenegro, Budva, leg. Reitter (HNHM). Bosnia-Herzegovina: 1♂, Drieno, leg. Reitter (HNHM). Bulgaria: 1♂, Sandanski [41°34'N, 23°17'E], 27.-28.IV.1985, leg. Wrase (cSch); 1♀, Sandanski, 6.-11.V.1984, leg. Wrase (cSch); 1♀, Sandanski env., 13.-26.VII.1985 (cSch); 1♂, Sandanski env., at light, 16.-23.VII.1985, leg. Schülke (cSch, cAss); 1♂, 1♀, Sandanski, at light, 17.VII.1985, leg. Pütz (cWun). Albania: 1♂, Elbasan, leg. Mader (NHMW). Greece [see also ASSING & WUNDERLE (2001)]: m a i n l a n d : 41 exs., Thessalia, Pilion Oros, 4 km SW Zagora, 39°25'N, 23°05'E, 450 m, moss, 3.IV.1998, leg. Assing & Wunderle (cAss, cWun); 3♂♂, Pilion (NHMW); 1♀, Volos (NHMW); 1♂, 5♀♀, Thessalia, Lárissa, flood-plain forest near Stómio, 39°53'N, 22°43'E, 5.IV.1998, leg. Schülke & Wunderle (cSch, cWun); 1♂, Aetolia-Arcanania, leg. Krüper (NHMW). P e l o p ó n n i s o s : 1♀, Pelopónnisos, Kalogria, swamp, 27.III.1986, leg. Assing (cAss); 1♂, Ilia, road Makrisia-Olympia, flood plain, 4.V.1999, leg. Brachat (cAss); 1♂, Korinthia, Lávka, Lake Stimfalia, 6.V.1999, leg. Angelini (cWun); 1♂, Parnon Oros, 1100 m, spring, wet moss, 11.VI.1996, leg. Wunderle (cWun). C o r f u : 2♂♂, Lake Korission, pond shore, 28.IX.1994, leg. Wunderle (cWun, cAss); 1♂, 1♀, NE-Corfu, Archaravi, 20.-25.X.1991, leg. Katschak (cWun); 2♂♂, Val de Ropa, leg. Woerz (NHMW, cAss); 1♂, 2♀♀, laguna, leg. Woerz (NHMW); 3♂♂, 2♀♀, locality not specified, leg. Moczarski (NHMW, cAss). Ukraine: 1♂, Odessa, Kilia district, Primorskoe, coast, under algae, 1.V.2003, leg. Gontarenko (cAss). Georgia: Likhskiy Khrebet ("Meskisch. Gb."), leg. Leder, Reitter (NHMW). Locality not specified or not identified: 1♂, "Dalmatien", leg. Reitter (HNHM); 8 exs. (NHMW); 1♀, "Carinth., Ponfatel", leg. Handerek (NHMW).

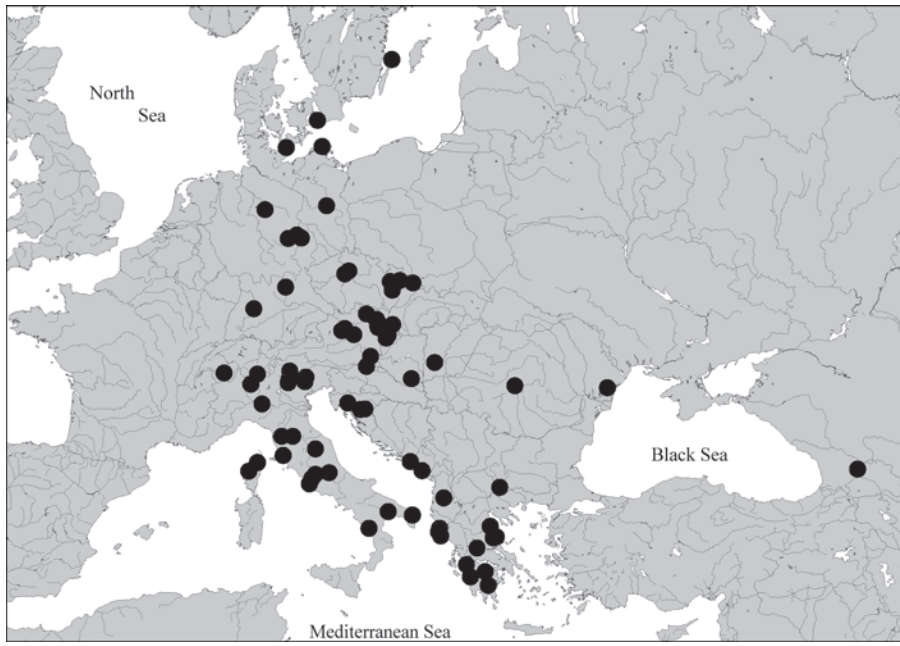
C o m m e n t : *Ochthephilum collare* was originally described as a variety of *O. fracticorne* and subsequently treated as a distinct species (ZANETTI 1980; HOZMAN 1985). The original description is based on an unspecified number of syntypes from "Knin in Nord- und Metkovic in Central-Dalmatien" (REITTER 1884). The only syntype located in the Reitter collection at the HNHM, a male from Knin, is designated as the lectotype.

The species is subject to considerable intraspecific variation, not only of external characters such as size, coloration, and the length of the elytra, but also of the size, shape, and internal structures of the aedeagus (Figs 1-7, 14-19). The body of most examined specimens is uniformly blackish. In some beetles, the pronotum is of reddish-brown coloration; rarely, the whole forebody is more or less brownish. The hind wings of the brachypterous morph are of reduced length, but distinctly longer than the elytra. Besides the somewhat longer elytra, this is the only external character reliably separating brachypterous *O. collare* from brachypterous *O. fracticorne*.

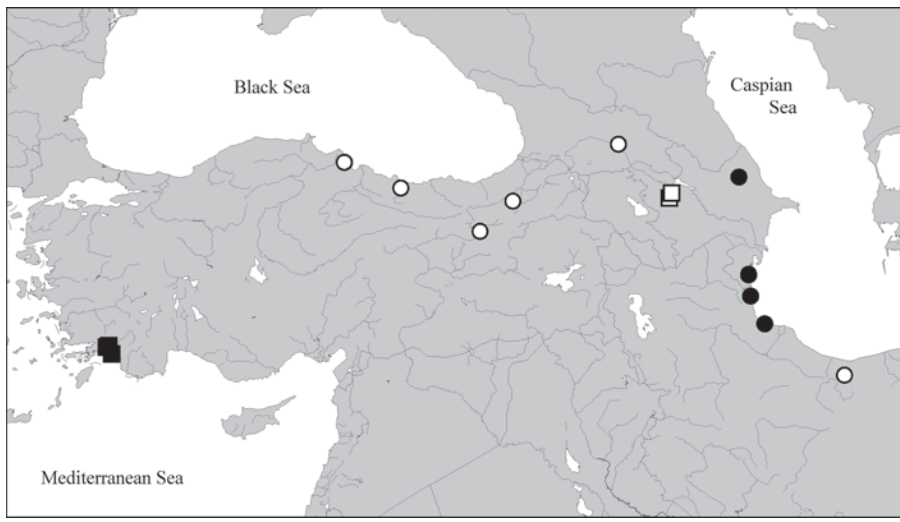
D i s t r i b u t i o n a n d b i o n o m i c s : *Ochthephilum collare* appears to have a distribution of the Ponto-Mediterranean type (Map 1). According to ZANETTI (1978), HOZMAN (1985), and SMETANA (2004), *O. collare* is widespread in the Mediterranean, Central and Eastern Europe, and southern Scandinavia. However, based on the material revised in the present paper, its presence in southwestern Europe seems highly unlikely. According to TRONQUET (2006), there is no reliable record from the eastern Pyrenees. Previous records from the Iberian peninsula are probably based on misidentifications and should be considered doubtful. The same applies to the record from Tunisia (SMETANA 2004), which probably refers to *O. brevipenne*. Based on the revised material, the distribution ranges from the western Caucasus region, southern Greece, and southern Italy to southern Sweden. The above specimens from Albania, Bosnia-Herzegovina, Bulgaria, Slovakia, Yugoslavia, and Georgia represent the first records from these countries.

In the north of its range (southern Scandinavia, northern and central parts of Central Europa), *O. collare* is generally absent from swamps, bogs, and riverine habitats, where

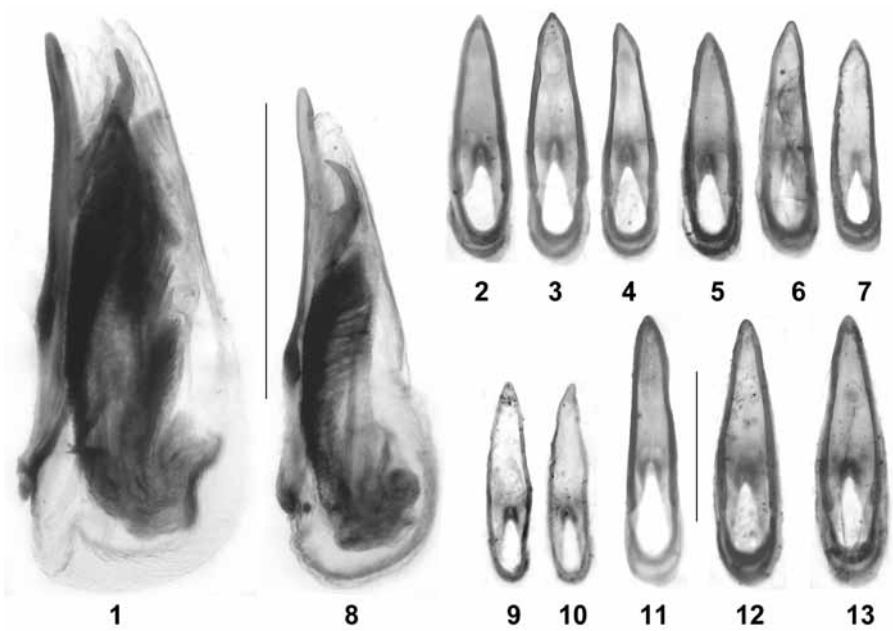
it is replaced by *O. fracticorne*, but almost exclusively found in coastal habitats, inland saline habitats, anthropogenic habitats such as pits, etc. In the southern parts of its distribution, however, it is more eurytopic and encountered in a wide range of moist habitats.



Map 1: Distribution of *Ochthephilum collare* (REITTER) based on revised records.



Map 2: Distributions of *Ochthephilum besuchti* (BORDONI) (open circles), *O. permutatum* nov.sp. (filled circles), *O. egregium* (REITTER) (open squares), and *O. hamatum* ASSING (filled squares), based on revised records.



Figs 1-13: *Ochthephilum collare* (REITTER) (**1-7**), *O. egregium* (REITTER) (**8-10**), *O. hamatum* ASSING (**11**), *O. besucheti* (BORDONI) (**12**), and *O. permutatum* nov.sp. (**13**): (**1, 8**) aedeagus of lectotypes in lateral view; (**2-7, 9-13**) sclerotised ventral portion of aedeagus in ventral view (2: Dalmatia; 3: Greece, Thessalia; 4: Greece, Fthiotis; 5: Greece, Pelopónnisos; 6: Austria; 7: Germany; 9: Azerbaijan, "Helenendorf"; 10: paralectotype; 11: paratype; 12: Turkey, Ordu; 13: Talysh mountains. Scale bars: 0.5 mm.

Ochthephilum egregium (REITTER 1884) (Figs 8-10, 20-21, Map 2)

Cryptobium egregium REITTER 1884: 83 f.

Type material examined: Lectotype ♂, present designation: "Kaukas Leder / Elisabetpol [= Gyandzha, =Kirovabad (Azerbaijan)] / coll. Reitter / Paratypus 1884, Cryptobium egregium Reitter [curator label] / Lectotypus ♂ *Cryptobium egregium* Reitter, desig. V. Assing 2008 / Ochthephilum egregium (Reitter) det. V. Assing" (HNHM). Paralectotypes: 5♂♂, 1♀: same data as lectotype [♀ with the curator label "Holotypus..."]; 1♂: same data, but "Ochthephilum turkestanicum (Korge) det. V. Assing" (HNHM); 1♂: "Caucasus Leder. Reitter / Elisabetpol / coll. Reitter / Paratypus 1884, Cryptobium egregium Reitter [curator label] / Ochthephilum turkestanicum (Korge) det. V. Assing" (HNHM).

Additinal material examined: Azerbaijan: 3♂♂, Xanlar ["Helenendorf"], leg. Reitter (HNHM, cAss). Locality not specified: 1♂, "Caspi" (HNHM); 11 exs., "Kaukas. Leder" (NHMW, cAss).

Comment: The original description is based on an unspecified number of syntypes from "Elisabethpol" (REITTER 1884). An examination of the type series in the Reitter collection at the HNHM, which comprises eight males and one female, revealed that they belong to two species, so that a lectotype designation is mandatory in the interest of the stability of nomenclature. Two males are conspecific with *O. turkestanicum* (KORGE). One of the males that are not conspecific with *O. turkestanicum* is designated as the lectotype. The interpretation of *O. egregium* by ZANETTI (1980) and HOZMAN (1985) refers to an undescribed species, which is described as *O. permutatum* below.

Ochthephilum egregium is readily distinguished from *O. collare* and other similar congeners by the distinctly smaller aedeagus and the shape of its internal structures (Figs 8-10, 20-21). The forebody of all examined specimens is of more or less uniformly brownish coloration.

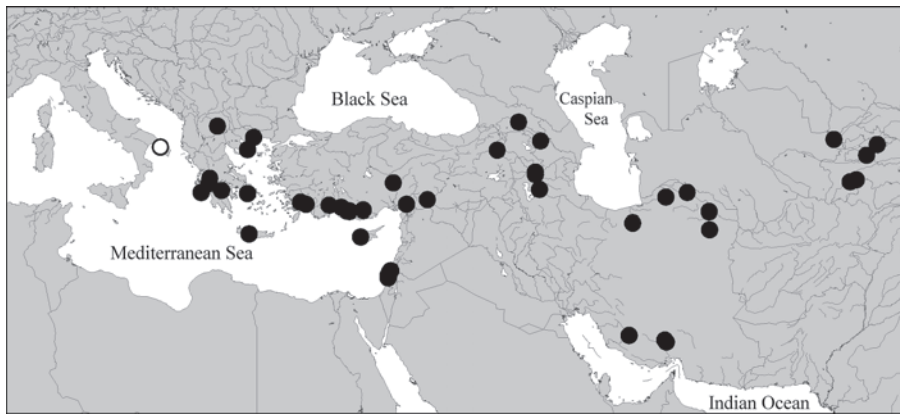
D i s t r i b u t i o n : Confirmed records are known only from Azerbaijan (Map 2).

***Ochthephilum turkestanicum* (KORGE 1968)** (Figs 42-45, Map 3)

M a t e r i a l e x a m i n e d : Macedonia: 5♂♂, 1♀, Vardar plain, leg. Schatzmayr (NHMW, cAss). Greece: 1♂, Nestos, 7 km from estuary, 17.III.1993, leg. Sabella (cZan); 1♂, Aitolia kai Akarnanía, locality not specified (NHMW); 1♂, Chalkidiki, Athos, leg. Schatzmayr (NHMW); 1♂, 3♀♀, Pelopónnisos, Kandhila, 12.VIII.1970, leg. Senglet (MHNG); 1♂, Pelopónnisos, Kalogria, 23.VI.1998, leg. Angelini (cWun); 1♂, Zakinthos, Skopos, 24.III.1936, leg. Eiselt (NHMW); 1♂, Kéa island, leg. v. Oertzen (cAss); 1♂, 1♀, Crete, Dhamnóni, VII.1978, leg. Tronquet (cTro). Turkey [see also ASSING (2008b)]: 1♂, 9♀♀ [partly teneral], Muğla, Akyaka, Gökova, 30.IV.1975, leg. Besuchet & Löbl (MHNG); 3♂♂, 1♀, Muğla, SE Köyceğiz, 36°57'N, 28°44'E, 10 m, flood plain forest, 28.III.2002, leg. Wunderle (cWun); 2♂♂, 1♀, Antalya, Side, 5.VI.1989, leg. Gillerfors (cWun); 1♀, Antalya, Side, 3.VI.1989, leg. Lundberg (cWun); 1♂, Antalya, Side, at light, 12.VI.1991, leg. Lundberg (cWun); 1♂, Antalya, Side, V.-VI.1989, leg. Rydh (cWun); 2♂♂, Antalya, 26 km NW Alanya, Incekum, 16.IV.-2.V.1984, leg. Pütz (cSch); 16 exs., Kayseri, Sultansazliği, 1000 m, 6.V.1978, leg. Besuchet & Löbl (MHNG); 1♂, 1♀, Birecik, Halfeti, bank of Euphrat river, 27.V.1987, leg. Schönmann & Schillhammer (NHMW); 1♂, Kars, Kağizman, Aras river, 1200 m, 18.VI.1986, leg. Besuchet, Löbl & Burckhardt (MHNG); 1♂ [teneral], "Lyciae Taurus", IX.1903, leg. Hauser (NHMW). Israel [see also ASSING (2008b)]: 2 exs., Haifa, leg. Simon (NHMW). Georgia: 2♂♂, Tbilisi, Ozero Lisi [41°45'N, 44°44'E, 19.VI.-13.VII.1988, leg. Wrase (cSch). Azerbaijan [see also paralectotypes of *O. egregium*]: 1♂, Ordubad ["Araxesthal"], leg. Leder & Reitter (HNHM). Iran [see also ASSING (2007)]: S e m n a n : 1 ex., 17 km N Shahmirzad, 5 km S Chashm, 35°51'N, 53°18'E, 2040 m, 22.V.2004, leg. Frisch & Serri (MNHUB). G o l e s t a n : 1 ex., Tang Rah, Golestan National Park, 37°24'N, 55°47'E, 490 m, 4.VI.2006, leg. Frisch & Serri (MNHUB). H o r m o z g a n : 2 exs., 9 km SW Hajiabad, 28°15'N, 55°51'E, 840 m, 22.IV.2006, leg. Frisch & Serri (MNHUB); 1 ex., W Hajiabad, Dar Agah, 28°22'N, 55°43'E, 1110 m, 22.IV.2006, leg. Frisch & Serri (cAss). R a z a v i K h o r a s a n : 3 exs., 20 km NW Torbat-e Heydariyeh, Senobar, 35°26'N, 59°06'E, 1730 m, 28.V.2006, leg. Frisch & Serri (MNHUB, cAss); 1 ex., 27 km SW Chanaran, Abghad, 36°31'N, 59°04'E, 1380 m, 29.V.2006, leg. Frisch & Serri (MNHUB). Uzbekistan: 3♂♂, Marg'ilon, leg. Staudinger (NHMW). Tajikistan: 1♂, 1♀, Vorukh env., Chichantau mts. ["Ost-Buchara, Tschitschantan", 39°51'N, 70°53'E], 1898, leg. Hauser (NHMW); 2♂♂, 1♀, Karateghin mts., Saripul ["Sary-pul", 38°25'N, 70°08'E], 1482 m, 1898, leg. Hauser (NHMW, cAss); 2♂♂, 2♀♀, Karateghin mts., "Baldschuan" [38°18'N, 69°40'E], 924m, 1898, leg. Hauser (NHMW). Locality not specified: 2♂♂: "Caucasus", leg. Leder & Reitter (HNHM, NHMW).

C o m m e n t : The morphology of the aedeagus (Figs 42-45) is highly distinctive in that only one apical sclerotised structure is present. This structure is of characteristic shape and usually visible in lateral view, even without dissecting it from the aedeagus. Specimens with a uniformly blackish forebody are rare. In the majority of specimens, at least the pronotum is of brownish or reddish-brown coloration.

D i s t r i b u t i o n : The vast distribution of this species (Map 3) ranges from southern Italy across Greece, Turkey, Cyprus, the Middle East, and the Caucasus region to Middle Asia (ASSING 2007, 2008b; ASSING & WUNDERLE 2001; HOZMAN 1985; material examined). HOZMAN (1985) reported the species from Turkey, but did not specify any localities. The species was recorded from southern Italy by CICERONI & ZANETTI (1995); the record is based on a male with the data "Torre Colimena (TA), salina, 20.VII.1989, L. De Marzo leg." (ZANETTI pers. comm.). The above specimens from Macedonia and Uzbekistan represent the first records from these countries.



Map 3: Distribution of *Ochthephilum turkestanicum* (KORGE), based on revised (filled circles) and unrevised (open circle) records.

Ochthephilum permutatum **nov.sp.** (Figs 13, 24, 26-30, Map 2))

Cryptobium egregium auctt. nec REITTER (1884)

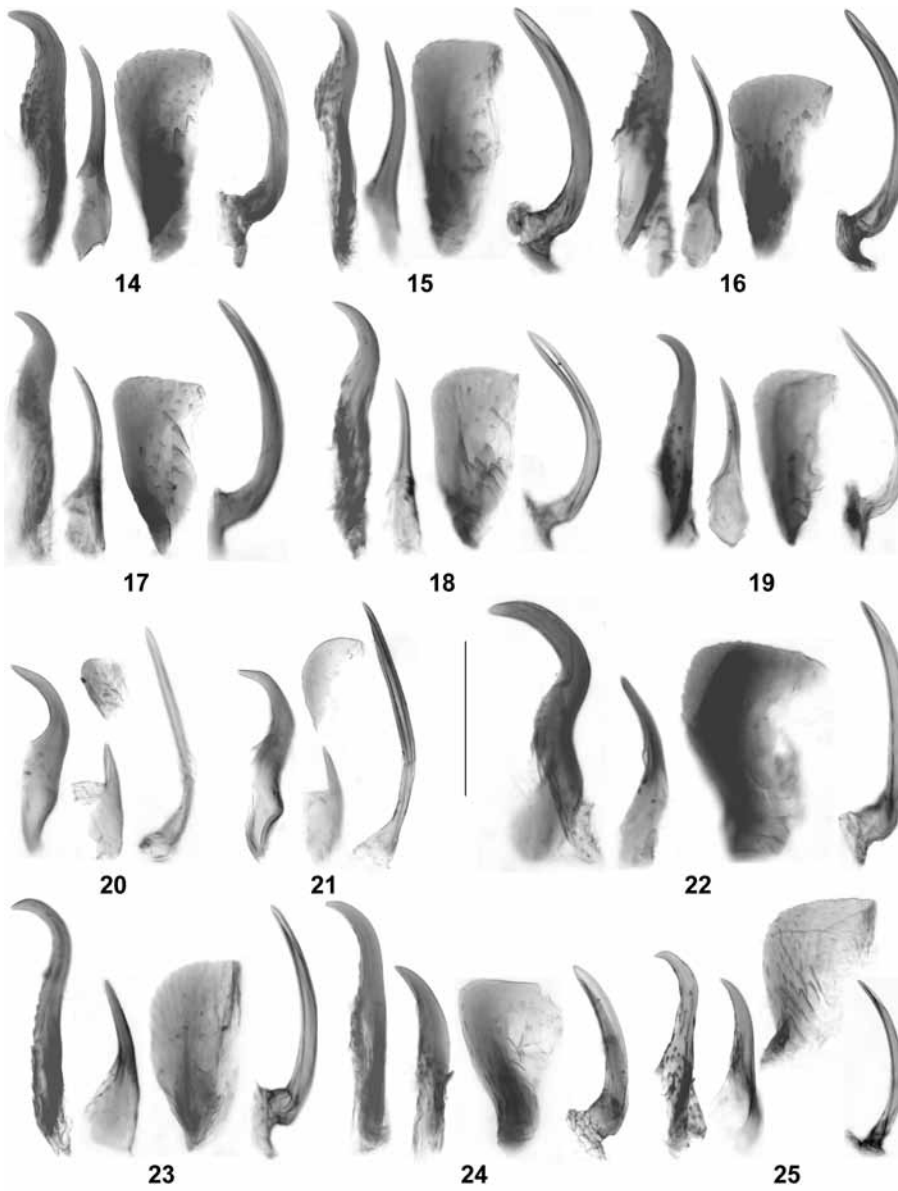
T y p e m a t e r i a l : Holotype ♂: "Lenkoran, Leder (Reitter) / Cryp. fractic. ab. collaris Reitt., coll. Reitter / Cryptobium egregium Reitt. (bona sp. nec ssp.), det. A. Zanetti 1978 / Ochthephilum egregium (Reitt.), Gusarov det. 1991 / Holotypus ♂ *Ochthephilum permutatum* sp.n., det. V. Assing 2008" (HNHM). Paratypes: 1♂: "Talyschgebg., Transcaucas. Leder, Reitter. / Crypt. fractic. ab. collaris Reitt., coll. Reitter / Ochthephilum egregium (Reitt.), Gusarov det. 1991" (HNHM); 1♂: "Talyschgebg., Transcaucas. Leder, Reitter. / Crypt. fractic. ab. collaris Reitt., coll. Reitter / Cryptobium egregium Reitt. (bona sp. nec ssp.), det. A. Zanetti 1978 / Ochthephilum egregium (Reitt.), Gusarov det. 1991" (cAss); 1♂: "Talyschgebg., Transcaucas. Leder, Reitter. / Jacquel. / coll. Schuster / ex coll. Scheerpeltz / fracticorne Payk." (NHMW); 1♀: "Talyschgebg., Transcaucas. Leder, Reitter. / collect. Hauser / Cryptobium Jacquelini Boield." (NHMW); 1♂: "Kaukas. Leder / egregium Reitt. / ex coll. Skalitzky / ex coll. Scheerpeltz" (NHMW); 1♂: "Lenkoran, Leder (Reitter) / collect. Eppelsh." (cAss); 1♂: "Iran, Guilān, Limir, 28.VI.73, 38°12'N, 48°52'E, A. Senglet / egregium Rtt." (MHNG); 1♂: "Iran, Guilān, Galûgâh, 37°31'N [recte: 37°30'N], 49°19'E, A. Senglet, 12.VI.1975" (cAss).

D e s c r i p t i o n : Body length 5.5-6.0 mm. Habitus as in Fig. 26. Coloration: Body blackish-brown to blackish, with the pronotum reddish to reddish-brown; legs pale brown; antennae brown to dark-brown. External characters as in *O. collare* (Figs 26-27).

♂: male secondary sexual characters similar to those of *O. collare*; posterior margin of sternite VII in the middle distinctly concave; tergite and sternite VIII as in Figs 28-29; aedeagus of similar shape as in *O. collare*, but apical internal structures of different shape and basal internal structure distinctly shorter and stouter (Figs 13, 24, 30).

♀: unknown.

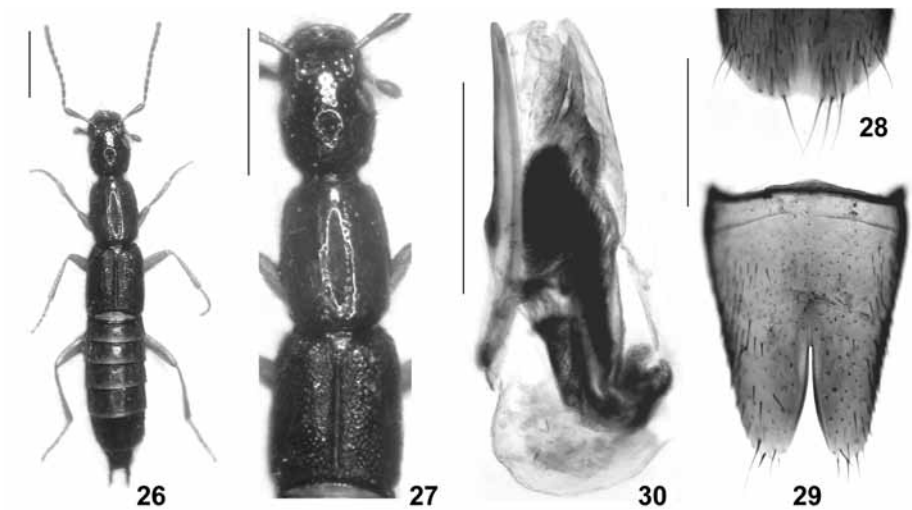
E t y m o l o g y : The name (Latin, adjective: changed, confused) refers to the fact that this species was previously confounded with *O. egregium*.



Figs 14-25: *Ochthephilum collare* (REITTER) (**14-19**), *O. egregium* (REITTER) (**20-21**), *O. hamatum* ASSING (**22**), *O. besucheti* (BORDONI) (**23**), *O. permutatum* nov.sp. (**24**), and *O. brevispinosum* nov.sp. (**25**): internal structures of aedeagus; long curved apical structure (left), elongate apical structure and dorso-apical lamellate structure (middle), and long basal structure (right) (14: Dalmatia; 15: Greece, Thessalia; 16: Greece, Fthiotis; 17: Greece, Pelopónnisos; 18: Austria; 19: Germany; 20: paralectotype; 21: Azerbaijan, "Helenendorf"; 22: paratype; 23: Turkey, Ordu; 24: paratype; 25: holotype). Scale bar: 0.2 mm.

Comparative notes: The new species is reliably distinguished from the similar *O. collare* and *O. egregium* only based on the internal structures of the aedeagus, from both by the distinctly shorter and stouter basal structure and by the differently shaped apical structures, from the latter additionally by the larger aedeagus and the much larger dorso-apical lamellate structure.

Distribution and bionomics: The known distribution of this species is confined to Azerbaijan and northwestern Iran (Map 2). These records suggest that *O. permutatum* may be a Caspian element, but more data are needed to verify this conclusion. The two paratypes from Iran were collected in June.



Figs 26-30: *Ochthephilum permutatum* nov.sp.: (**26**) habitus; (**27**) forebody; (**28**) posterior portion of male tergite VIII; (**29**) male sternite VIII; (**30**) aedeagus in lateral view. Scale bars: 26-27: 1.0 mm; 28-30: 0.5 mm.

Ochthephilum besucheti (BORDONI 1980) (Fig. 23, Map 2)

Cryptobium egregium: HOZMAN (1985); partim.

Type material examined: Holotype ♂: "Turquie Samsun, Samsun-Bafra, 19.V.67, Cl. Besuchet / Holotypus Cryptobium besucheti n. sp., Det. A. Bordoni 1977 / Ochthephilum besucheti (Bordoni) det. V. Assing 2008" (MHNG).

Additional material examined: Turkey: Ordu: 1♂, 15 km S Ordu, S Kabaduz, 40°49'N, 37°54'E, 990 m, grassy road margin, 30.VII.2006, leg Assing (cAss). Erzurum: 1♂, ca. 35 km NW Tortum, Mescit Dağları, ca. 40°30'N, 41°25'E, 1700-2000 m, 17.VI.1998, leg. Solodovnikov (cAss). Erzincan: 2♂♂, Tercan, Euphrat, 1400 m, 6.VI.1986, leg. Besuchet, Löbl & Burckhardt (MHNG, cAss). Georgia: 1♂, Tbilisi env., Mzcheta [41°51'N, 44°43'E], 26.VI.1988, leg. Wrase & Schülke (cSch). Iran: 1♂ ["Cryptobium egregium Reitter, Hozman det. 1983"], Mazanderan, Baladeh, 36°13'N, 51°49'E, 2200 m, 12.VII.1974, leg. Senglet (MHNG).

Comment: The original description of *O. besucheti* is based on a male holotype from "Samsun, Bafra" and two female paratypes from Erzurum and Istanbul (BORDONI 1980). The holotype was examined and its aedeagus figured by HOZMAN (1985). Since the species can be reliably distinguished from similar congeners only based on the male

primary sexual characters, the identity of the two paratypes, particularly that from Istanbul, is doubtful. For illustrations of the internal structures of the aedeagus see Fig. 23. Almost all the examined specimens have a uniformly blackish forebody.

D i s t r i b u t i o n : The species is currently known from several localities in northeastern Turkey, one locality in Georgia, and one locality in northern Iran, suggesting that it is a Caspian element (Map 2). The specimens from Georgia and Iran represent the first records from these countries.

***Ochthephilum brevispinosum* nov.sp.** (Figs 25, 31-35)

T y p e m a t e r i a l : Holotype ♂: "Kyrgyzstan, Issyk-Köl, Balykcy, Lake Issyk-Köl, 1.VIII.2003, 42°27'10"N, 76°12'11"E, 1600 m, leg. L. Schmidt / Holotypus ♂ *Ochthephilum brevispinosum* sp.n., det. V. Assing 2008" (cAss).

D e s c r i p t i o n : Body length 5.8 mm. Habitus as in Fig. 31. Coloration: Body blackish; legs yellowish; antennae dark brown, with segment I yellowish brown.

In external morphology similar to *O. collare*, but with shorter and posteriorly distinctly widened elytra (Figs 31-32); elytra approximately 0.75 times as long as pronotum.

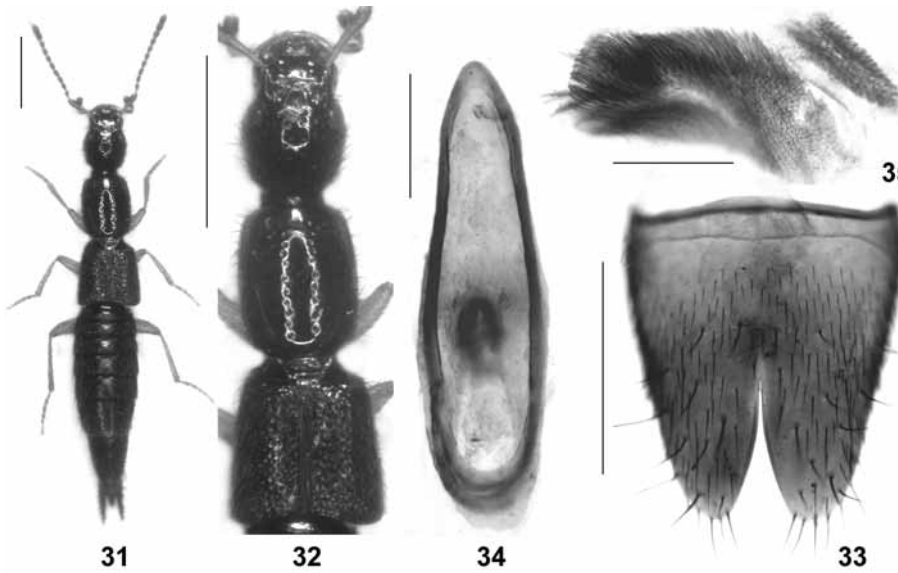
♂: male secondary sexual characters similar to those of *O. fracticorne*; sternite VII in the middle with shallow longitudinal impression, this impression with cluster of stout black setae; posterior margin of of sternite VII in the middle concave; posterior margin of tergite VIII simply convex; sternite VIII as in Fig. 33; aedeagus relatively small, rather broad in ventral view, and with comparatively short spines in internal sac (Figs 25, 34-35).

♀: unknown.

E t y m o l o g y : The name (Latin, adjective: with short spines) alludes to the internal structures of the aedeagus.

C o m p a r a t i v e n o t e s : In external characters, the new species is indistinguishable from brachypterous *O. fracticorne*, with which it also shares the similar shape and chaetotaxy of the male tergite VIII. Both species can be reliably distinguished only by the size and shape of the aedeagus (*O. fracticorne*: larger and in ventral view more slender) and particularly by the size and shape of the internal structures of the aedeagus (*O. fracticorne*: all internal structures much stouter and longer, long apical structure strongly bent). For illustrations of the aedeagus of *O. fracticorne* see Figs 36-39, as well as ZANETTI (1980) and HOZMAN (1985).

D i s t r i b u t i o n : The type locality is situated near Issyk-köl (=Issyk-kul) lake in northern Kyrgyzstan. In view of its external similarity to *O. fracticorne*, it does not seem unlikely that previous records of *O. fracticorne* from Middle Asia in fact refer to this species. This conclusion is also based on the illustration of the aedeagus of *O.* "*fracticorne*" from Kazakhstan in KASHCHEEV (1985), which undoubtedly does not refer to *O. fracticorne*, but bears some resemblance to the aedeagus of *O. brevispinosum*.



Figs 31-35: *Ochthephilum brevispinosum* nov.sp.: (**31**) habitus; (**32**) forebody; (**33**) male sternite VIII; (**34**) ventral aspect of aedeagus; (**35**) internal spine clusters of aedeagus. Scale bars: 31-32: 1.0 mm; 33: 0.5 mm; 34-35: 0.2 mm.

Ochthephilum brevipenne (MULSANT & REY 1861) (Figs 46-47, 48-51, Map 4)

Cryptobium brevipenne MULSANT & REY 1861: 147 ff.

Cryptobium algiricum FAGEL 1967: 5 f.; **nov.syn.**

Type material examined: *C. brevipenne*: Lectotype ♂, present designation [brachypterous morph; aedeagus dissected prior to present study]: "[original black circular label glued on rectangular white label] / Cryptobium brevipenne M. R. ♂, Gusarov det. 1995 / Lectotypus ♂ *Cryptobium brevipenne* Mulsant & Rey, desig. V. Assing 2008 / Ochthephilum brevipenne (Mulsant & Rey), det. V. Assing 2008" (MHNL). Paralectotype ♂ [aedeagus dissected prior to present study]: "[original golden circular label glued on rectangular white label] / Cryptobium fracticorne (Grav.) [sic] ♂, Gusarov det. 1995 / Paralectotypus ♂ *Cryptobium brevipenne* Mulsant & Rey, desig. V. Assing 2008 / Ochthephilum fracticorne (Paykull), det. V. Assing 2008" (MHNL).

C. algiricum: Holotype ♂: "Algérie: Aine Touta, 25 km S. de Batna, 18-v-1954, G. Fagel / Type / G. Fagel det. *algiricum* n. sp. / Coll. R. I. Sc. N. B. / Ochthephilum brevipenne (Mulsant & Rey), det. V. Assing 2008" (IRSNB). Paratypes: 1♂: "Bougie, V.1901, Dr. A. Chobaut / Paratype / G. Fagel det. *algiricum* n. sp. / Coll. R. I. Sc. N. B. / Ochthephilum brevipenne (Mulsant & Rey), det. V. Assing 2008" (IRSNB); 1♂: "Tunisie: Mateur, 2.1937, Ch. Roche / Paratype / G. Fagel det. *algiricum* n. sp. / Coll. R. I. Sc. N. B. / Ochthephilum brevipenne (Mulsant & Rey), det. V. Assing 2008" (IRSNB); 1♀: "St. Charles, Algérie, A. Thery / Paratype / G. Fagel det. *algiricum* n. sp. / Coll. R. I. Sc. N. B. / Ochthephilum brevipenne (Mulsant & Rey), det. V. Assing 2008" (IRSNB).

Additional material examined: Tunisia: 1♂, 1♀ [macropterous], Le Kef, IV.1937, leg. Normand (cTro); 1♀ [macropterous], Le Kef, VI.1942, leg. Normand (cTro); 1♀ [macropterous], 12 km NW Sousse, El Kantaoui, 25.-30.XI.1992, leg. Wrase (cSch). Algeria: 1♂ [macropterous], Annaba, Forêt de La Calle, swamp, IV.1936, leg. Normand (cTro); 5 exs. [macropterous], Annaba, Forêt de La Calle, swamp, V.1938, leg. Normand (cTro, cAss). France: 1♂ [macropterous], Pyrénées-Orientales, Etang de Leucate, Salses, 8.IV.1992, leg. Starke (cAss); 1♂ [macropterous], Pyrénées-Orientales, Le Canet, pond, 21.IV.2004, leg. Tronquet (cTro); 1♂ [macropterous], Pyrénées-Orientales, Torreilles, Gora de l'Avquader, 16.XI.2005, leg. Tronquet

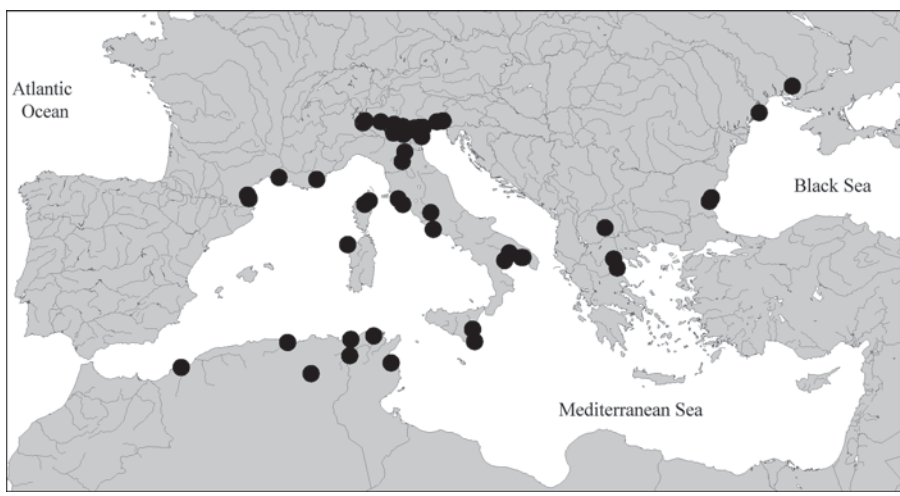
(cTro); 5 exs. [macropterous], Provence, Camargue, 8.IV.1985, leg. Renner (cWun, cAss); 1♀ [macropterous], Camargue, 8.IV.1985 (cAss); 2♀♀ [macropterous], Provence, Var, Roquebrune, Argens inundation, leg. Ochs, XII.1960 (cTro); 2♂♂, 5♀♀, Corsica, Etang de Biguglia, rotting reed, 11.IV.1990, leg. Wunderle (cWun, cAss); 1♀ [macropterous], Corsica, Lecci, 26.VII.1980, leg. Tronquet (cTro); 1♂, locality not specified, Rey collection (MHNL). Italy: Lombardia: 3 exs., Brescia, Lago di Garda, Sirmione, Lugana, 23.III.1974, leg. Zanetti (cZan); 1♂, Brescia, Provaglio d'Iseo, peat bog, 28.III.1982, leg. Zanetti (cZan); 1♂, Marmirolo (MN), Bosco Fontana, 27.I.1980, leg. Zanetti (cZan); 1♂, Milano, Cesate, 10.III.1974, leg. Ferri (cZan); 1♂, Brianza, Case Bracchi, VII.1959, leg. Brivio (NHMW). Veneto: 1♂, Verona, stadio, *Salix* litter, 23.I.1975, leg. Zanetti (cZan); 1♂, Cavaion (VR), Palude di Canova (cZan); 1♂, Lazise (VR), Pacengo, 19.IV.1974, leg. Sette (cZan); 5 exs., Montecchia di Crosara (VR), 22.II.1976, leg. Zanetti (cZan); 6 exs., Custoza (VR), swamp, 22.I.1972, leg. Zanetti (cZan); 1♀, Custoza, *Salix* litter, 10.II.1974, leg. Zanetti (cZan); 1♂, 1♀, Cerea (VR), Palude Brusa, base of *Salix*, 21.III.2004, leg. Zanetti (cZan); 1♀, Cerea (VR), Palude Brusa, 17.I.1988, leg. Zanetti (cZan); 1♂, Legnago (VR), Torretta, 14.IV.1996, leg. Zanetti (cZan); 1♂, Padova, 30.I.1970, leg. Dioli (cZan); 2♂♂, Colli Euganei, 16.-19.IV.1921, leg. Moczarski & Scheerpeltz (NHMW, cAss); 3 exs., Rosolina, 15.V.1973, leg. Zanetti (cZan); 1♂, Mira (VE), Cambararo, 6.III.1973, leg. Zanetti (cZan); 1♂, Bibione, 14.V.1989, leg. Aßmann (cFel); 1♂, Venezia, 4.XI.1955, leg. Cadamuro (NHMW); 1♂, "Venet.", leg. Maghera (NHMW). Friuli-Venezia Giulia: 5 exs., Grado (NHMW). Emilia-Romagna: 1♂, 1♀, Roncobiacco, leg. Castellini (cTro); 2♂♂, Bologna (NHMW). Toscana: 2♂♂, 1♀, Grosseto, Principe a Mare, 25.X.2005, leg. Meybohm (cAss); 1♀, Laguna di Orbetello (GR), 27.XII.1974, leg. Rossi (cZan). Lazio: 1♂, Roma, Colle del Forno, Montelibretti, 1.VII.1975, leg. Rossi (cZan); 1♂, 3♀♀, same data, but 14.XI.1974 (cZan, cAss); 1♀, same data, but 21.IV.1975 (cZan); 1♀, Latina, Appia, km 83, 9.IV.1975, leg. Rossi (cZan). Puglia: 3♂♂, 1♀ Lato river, 10 km from estuary (TA), 2.I.1977, leg. Angelini (cZan, cZan); 1♂, S. Pietro (Manduria: TA), 18.VII.1976, leg. de Marzo (cZan); 1♂, 1♀, Manduria (TA), V.1969, leg. de Marzo (cZan). Basilicata: 1♂, Policoro (MT), 18.V.1970 (cZan). Sardegna: 6 exs., Porto Torres (SS), Stagno di Pilo, 24.V.1995, leg. Angelini (cZan, cAss). Sicilia: 1♂, Lago di Lentini, 28.III.1972, leg. Wolfrum (cZan); 5♂♂, 3♀♀, Lago di Lentini, 28.III.1942 (NHMW); 4 exs., Vendicari (SR), 7.VIII.1990, leg. Sabella (cZan, cAss); 1♂ [teneral], 1♀, Vendicari, 5.VIII.1990, leg. Sabella (cZan); 1♀, Vendicari, 17.VII.1990, leg. Zanetti (cZan); 1♀, Vendicari, salicornietum, 8.VI.1992, leg. Sabella (cZan). Macedonia: 5♂♂, 7♀♀, Vardar plain, leg. Schatzmayr (NHMW, cAss). Bulgaria: 3♂♂, 1♀ [macropterous], Burgas, Pomorie env., 9.-18.V.1985, leg. Wrase (cSch, cAss); 4♀♀, Pomorie, 25.V.1985, leg. Wrase (cSch); 1♀, N Nesebâr, Vlas, 19.-26.V.1984, leg. Wrase (cSch). Greece: 2♂♂ [macropterous], Makedhonia, Pieria, Katerini env., 0-300 m, VII.1992, leg. Eichler (cAss); 2♂♂, Thessalia, Lárissa, laguna near Stómio, 4.IV.1998, leg. Schülke & Wunderle (cSch, cWun). Ukraine: 1♂, Odessa oblast, Kiliya district, Primorske, coast, flood debris, 29.IV.2003, leg. Gontarenko (cAss); 1♂, Nikolaiev [= Mykolayiv], 8.VI.1983, leg. Beresovski (cAss).

Comment: *Cryptobium brevipenne* was described from an unspecified number of syntypes from "Montagnes de l'Auvergne", "Bourgogne", and "Provence" (MULSANT & REY 1861). Three specimens were found in the Rey collection at the MHNL, two of them are evidently syntypes and one is of uncertain status; the two syntypes, both males, are not conspecific. According to the curator in charge, the black circular label attached to one of the syntypes signifies "Provence" (LABRIQUE pers. comm.). This specimen is in agreement with the previous interpretation of *O. brevipenne* and designated as the lectotype. The golden circular label attached to the other syntype (now a paralectotype), which is conspecific with *O. fracticorne*, signifies "Auvergne (Mont Dore)" (LABRIQUE pers. comm.). According to FAGEL (1967), a male syntype (locality unknown) is in the Fauvel collection at the IRSNB. Since he only refers to the external characters of this specimen, it is uncertain if he examined the aedeagus.

The original description of *Cryptobium algiricum* is based on a male holotype from "Algérie: Aïne Touta, 25 km S. de Batna", a male paratype from "Tunisie: Mateur", a female paratype from "Algérie: Saint-Charles", five paratypes from "Bougie", and one

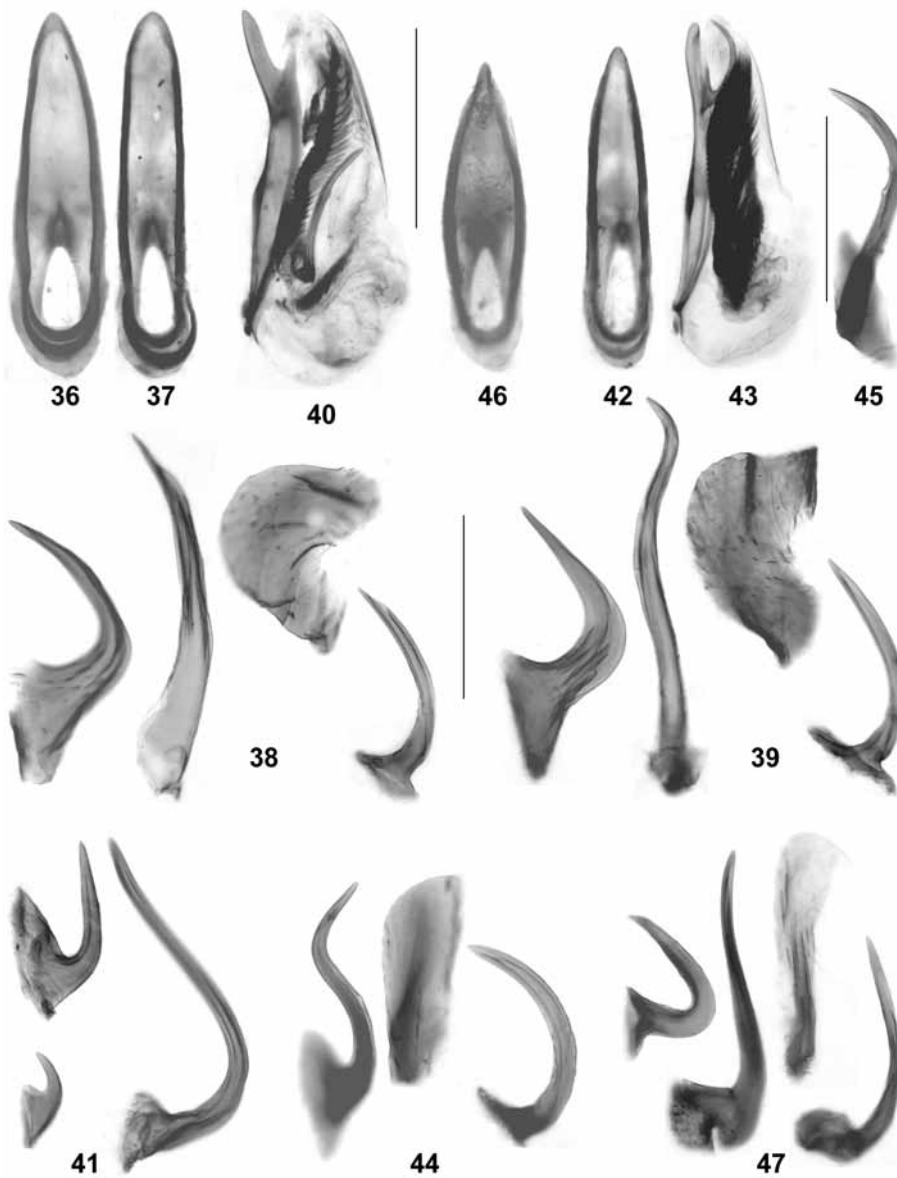
from "Tétouan" (FAGEL 1967). An examination of the holotype and three paratypes revealed that they are conspecific with *O. brevipenne*; hence the synonymy proposed above. The illustrations of the aedeagi of *O. brevipenne* and *O. algiricum* in FAGEL (1967: figures 2-3) are highly inaccurate. They are evidently based on dried and consequently more or less deformed aedeagi; the aedeagal characters of the types of *O. algiricum* are illustrated in Figs 48-51.

Most of the specimens examined have a uniformly blackish forebody. Beetles with a brownish pronotum or – very rarely – with a more or less completely brownish forebody were observed particularly in material from North Africa and Sicily. In contrast to what the specific epithet suggests, the species is wing-dimorphic and many of the examined specimens have rather long elytra and fully developed hind wings. *Ochthephilum brevipenne* is readily distinguished from its congeners based on the shape of the apex of the aedeagus (Figs 46, 48-51) and its internal structures (Fig. 47). For illustrations of the aedeagus see Figs 48-51, as well as ZANETTI (1980) and HOZMAN (1985).

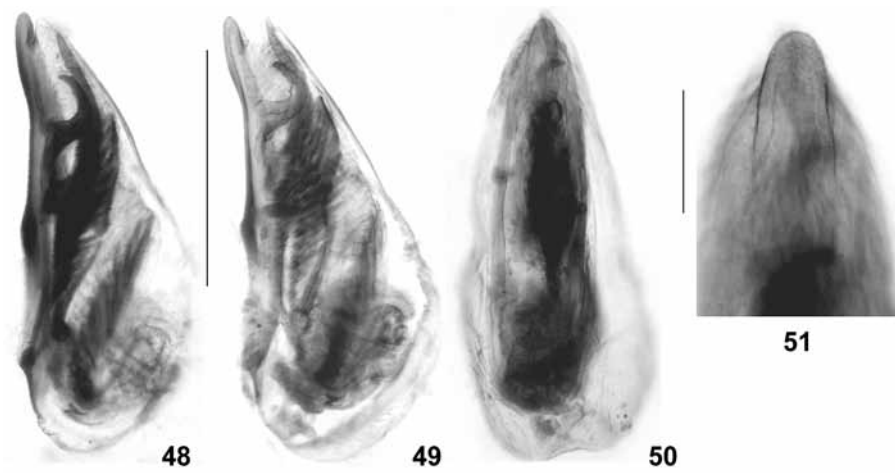


Map 4: Distribution of *Ochthephilum brevipenne* (MULSANT & REY), based on revised records.

D i s t r i b u t i o n : *Ochthephilum brevipenne* appears to have a Holo-Mediterranean distribution (Map 4). It is widespread in Europe, from southwestern France and northwestern Africa to Greece and Ukraine. The above specimens from Macedonia represent the first record from this country. For additional records from France, Italy, Switzerland, and Greece see FAGEL (1967), ZANETTI (1980), and HOZMAN (1985). *Ochthephilum brevipenne* has also been reported from Iberian peninsula, but these records require confirmation.



Figs 36-47: *Ochthephilum fracticorne* (PAYKULL) (**36-39**; **36, 38**: Germany; **37, 39**: Vladivostok), *O. jacquelinii* (BOIELDIEU) (**40-41**), *O. turkestanicum* (KORGE) (**42-45**; **42, 44**: Kazakhstan; **43, 45**: Turkey), and *O. brevipenne* (MULSANT & REY) (**46-47**): (**36-37, 42, 46**) ventral aspect of aedeagus; (**38-39, 41, 44, 47**) internal structures of aedeagus; apical structure(s) (left), dorso-apical lamellate structure (middle; absent in 41), and long basal structure (right); (**40, 43**) aedeagus in lateral view; (**45**) apical internal structure of aedeagus. Scale bars: 36-37, 40, 42-43, 46: 0.5 mm; 38-39, 41, 44-45, 47: 0.2 mm.



Figs 48-51: *Ochthephilum brevipenne* (MULSANT & REY) (holotype (48) and paratype (49-51) of *Cryptobium algiricum* FAGEL): (**48-50**) aedeagus in lateral and in ventral view; (**51**) apex of aedeagus in ventral view. Scale bars: 48-50: 0.5 mm; 51: 0.1 mm.

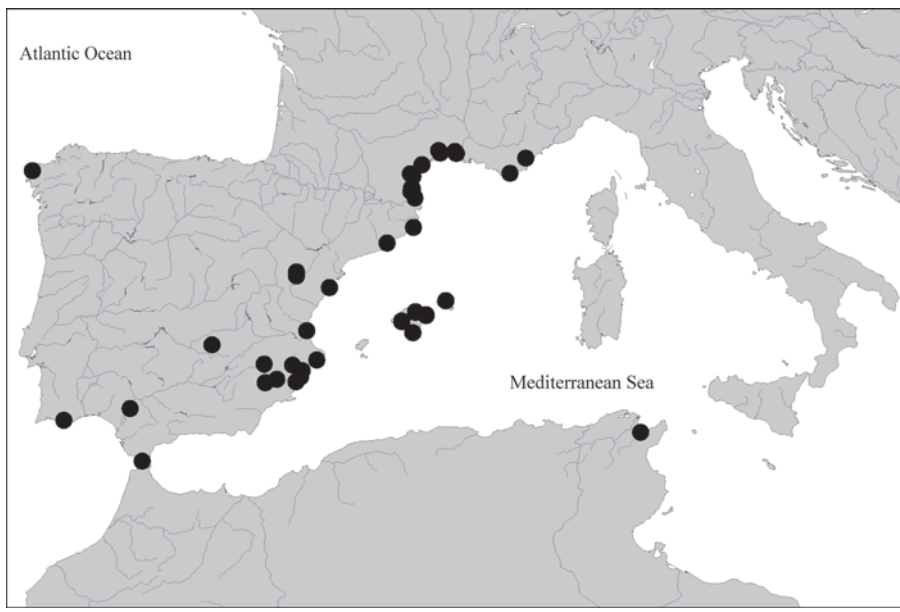
Ochthephilum jacquelinii (BOIELDIEU 1859) (Figs 40-41, Map 5)

Material examined: Tunisia: 1♂, Radès, IV.1937, leg. Grosclaude (cTro). Spain: Galicia: 2♀♀, Braño, leg. Franz (NHMW). Cataluña: 2 exs., Gerona, Playa de Aro, 3.IV.1972, leg. Lohse (MHNG); 1 ex., Barcelona, Prat del Llobrigat, 2.III.1952, leg. González (MHNG); 5 exs., Tarragona, Laguna Encanizada, 9.V.1966, leg. Besuchet (MHNG); 1 ex., Tarragona, Ebro delta, 28.III.1988, leg. Starke (cAss). Castilla-La Mancha: 4 exs. [partly teneral], Ciudad Real, Manzanares, 6.VIII.1969, leg. Comellini (MHNG); 1 ex. [teneral], Albacete, Hellín, 29.VI.1971, leg. Comellini (MHNG). Valencia: 2 exs. [1 teneral], La Albufera, 17.VI.1971, leg. Comellini (MHNG); 1 ex., Castellón, Peñiscola, 4.V.1966, leg. Besuchet (MHNG); 5 exs. [teneral], Alicante, Santa Pola, 1.&3.VII.1971, leg. Comellini (MHNG); 5 exs., Alicante, Elda, 20.VI.1971, leg. Comellini (MHNG); 1 ex., Alicante, La Mata, 3.V.1988, leg. Sprick (cAss); 8 exs., Alicante, Altea, Rio Algar, 38°36'N, 0°02'W, 0 m, 31.VII.2008, leg. Forcke (cAss, cSch); 1♀, Alicante, VII.1971, leg. Senglet (cTro). Murcia: 1 ex., Bullas, 4.VII.1971, leg. Comellini (MHNG); 2 exs., Archena, 30.VI.1971, leg. Comellini (MHNG). Andalucía: 1♀, Cádiz, Tarifa, III.1991, leg. Poot (cWun); 1 ex., Sevilla, leg. Franz (NHMW). Baleares: 2♀♀, Mallorca, S'Avall, 8.V.1965, leg. Besuchet (MHNG); 9 exs., Mallorca, Playa de Cañamel, 24.&29.IV.1965, leg. Besuchet & Comellini (MHNG); 3 exs., same locality, 6.V.1965, leg. Besuchet (MHNG); 6 exs., Mallorca, La Albufera, 28.-29.IV.1965, leg. Besuchet & Comellini (MHNG); 7 exs. [partly teneral], La Albufera, 8.VII.1971, leg. Comellini (MHNG); 3♀♀, Mallorca, Rabassa, leg. Breit (NHMW); 2 exs., Menorca, Playa de Tirant Nou, leg. Franz (NHMW, cAss). Portugal: 2 exs., Quarteira, 7.IV.1991, leg. Terlutter (cAss). France: 2♂♂, 4♀♀, Pyrénées-Orientales, Torreilles, Agly estuary, 20.X.2003, leg. Tronquet (cTro, cAss); 1♂, Torreilles, Gora de l'Avquader, 16.XI.2005, leg. Tronquet (cTro); 2♂♂, same locality, 11.XII.2003, leg. Tronquet (cTro); 1♂, 1♀, Pyrénées-Orientales, Le Canet, 2.V.2004, leg. Tronquet (cTro); 1♂, 3♀♀, same data, but 21.IV.2004 (cTro); 1♀, Pyrénées-Orientales, Saintes-Marie-la-Mer, Bourdigou inundation, 17.IV.2002, leg. Tronquet (cTro); 1♀, Pyrénées-Orientales, Perpignan, St. Nazaire, 4.VI.1996, leg. Aßmann (cAss); 1♀, Pyrénées-Orientales, Port-Vendres (NHMW); 5♂♂, 1♀, 1♀, Pyrénées-Orientales, St-Nazaire (NHMW, cAss); 1♀, Hérault, Vias env., Roquehaute, 1.V.1964, leg. Puthz (cAss); 1♂, Hérault, Lattes, leg. Lavagne (NHMW); 1♀, Hérault, Montpellier, leg. Lavagne (NHMW); 2♂♂, Hérault (NHMW); 2♀♀, Languedoc-Roussillon, Aude, Peyriac-de-Mer, 1.IV.1970, leg. Nicolas (cTro); 1♀, Aude, Port la Nouvelle, 26.III.1970, leg. Nicolas (cTro); 1♂, Camargue, Gard, Albaron, II.1975 (cTro); 1♀, Camargue

(NHMW); 1♂, 1♀, Provence, Var, Salins d'Hyères, swamp, 15.VII.1983, leg. Löbl (cAss, cSch); 1♂, Provence, Var, Roquebrune, Argens inundation, leg. Ochs, XII.1960 (cTro); 1♀, "Gramenet" [?] (NHMW); 2♀♀ [identification uncertain], "Corsica" (NHMW).

Comment: The aedeagus is characterised by the highly distinctive shape of the apex of the ventral process, by two relatively small and strongly curved apical sclerotised structures, as well as by the absence of a distinct dorso-apical structure (Figs 40-41). The forebody is generally of reddish to brownish coloration.

Distribution: Based on the revised material, *O. jacquelinii*, evidently an Atlanto-Mediterranean species, is distributed in Northwest Africa, the Iberian peninsula, and southern France (Map 5). It has also been reported from Great Britain and Libya, but these records require confirmation; at least those from Great Britain appear somewhat unlikely. The above specimens from Portugal and Tunisia represent first national records. On various occasions, this species was collected in the same localities as *O. brevipenne*.



Map 5: Distribution of *Ochthephilum jacquelinii* (BOIELDIEU), based on revised records.

Ochthephilum fracticorne (PAYKULL 1800) (Figs 36-39, 52-53, Maps 6-7)

Ochthephilum hokkaidense ITO 2008: 30 ff.; probably synonymous.

Material examined: Sweden: 1♂, Bodsjö, 18.VI.1944, leg. Bergvall (cZan); 1♀, Lappland, Gaeddvik (NHMW). Spain: 1♂, Castilla-León, León, Puerto de Panderruedas, 1350 m, 8.VIII.1992, leg. Tronquet (cTro). France [see also paralectotype of *O. brevipenne*]: 1♀, Pyrénées-Atlantiques, Forêt d'Iraty, Tourbière de Olzalure, 1160 m, *Sphagnum*, 24.VI.2007, leg. Tronquet (cTro); 2♂♂, Pyrénées-Orientales, Mosset, Pic Roussillou, 1200 m, *Sphagnum*, 25.V.1998, leg. Tronquet (cTro, cAss); 1♂, Pyrénées-Orientales, Molitg-les-Bains, 1100 m, 12.V.1997, leg. Tronquet (cTro); 3♀♀, Pyrénées-Orientales, Col de Jau, 1550 m, bog, 18.V.2001, leg. Tronquet (cTro); 1♀, Languedoc-Roussillon, Aude, Forêt de Montnaie-Gravas, 1800 m, *Sphagnum*, 4.VI.1998, leg. Tonquet (cTro); 1♂, Languedoc-Roussillon, Gard, 10 km SSE Vauvert,

17.IV.1990, leg. Scheuern (cWun); 1♀, Basse-Normandie, Bois de Pirou, VIII.1985, leg. Tronquet (cTro); 1♂, Île-de-France, Fontainebleau [48°24'N, 2°42'E], 12.IV.1969, leg. Tronquet (cTro); 1♂, Île-de-France, Trappes, Etang de St. Quentin, 7.III.1970, leg. Tronquet (cTro); 1♂, Centre, Dhuizon, VI.1971, leg. Tronquet (cTro); 1♀, Bourgogne, Côte-d'Or, Champeau [47°16'N, 4°08'E], Le Moulin Morin, 31.V.1981, leg. Tronquet (cTro); 2♀♀, Franche-Comté, Doubs, Frasne, 5.VII.1972, leg. Tronquet (cTro). Germany: Nordrhein-Westfalen: 10♂♂, 7♀♀, SW Gronau, Zwillbrocker Venn, *Molinia*, 8.III.1996, leg. Assing & Wunderle (cAss, cWun); 1 ex., same locality, 20.XI.1996, leg. Feldmann (cFel); 2 exs., same locality, III.1996, leg. Feldmann (cFel); 2 exs., same locality, III.1995, leg. Feldmann (cFel); 9♂♂, 19♀♀, Kreis Steinfurt, N Hopsten, Wiechholz, 6.III.1999, leg. Assing (cAss); 1 ex., Mönchengladbach, Großheide, *Alnus* litter, III.1989, leg. Wunderle (cWun); 1 ex., same data, but 10.VI.1986 (cWun); 1♂, Mönchengladbach-Gerkerath, *Alnus* and *Betula* litter, 19.III.1995, leg. Wunderle (cWun); 1♂, Kaldenkirchen, 29.X.1977 (cWun); 2 exs., Brühl, Ville, 17.IX.1988, leg. Wunderle (cWun); 1 ex., Elmpt, Elmpter Bruch, 20.XI.1991, leg. Wunderle (cWun); 3 exs., Bonn, Niederkassel, Mondorf, bank of Rhine river, flood debris, 21.XII.1993, leg. Siede (cWun). Niedersachsen: 127 exs., NW Hannover, Helstorfer Heide, heathland, pitfall traps, 1981-1990 (cAss); 1 ex., same data, but pine forest, 1987 (cAss); 78 exs., same locality, heathland, soil extractions, 1981/83 (cAss); 3 exs., NW Hannover, Hagenburg, bog, in *Sphagnum*, 15.IV.1990, leg. Sprick (cAss); 5 exs., N Celle, Scheuen, heathland, soil extractions, 1984 (cAss); 1 ex., Celle env., Eschede, bog, in *Sphagnum*, 18.V.1989, leg. Assing (cAss); 1 ex., Lüneburger Heide, Niederhaverbeck, heathland, pitfall, 1985 (cAss); 1 ex., same locality, soil extractions, 1983 (cAss); 38 exs., same data, but grassland, 1986 (cAss); 85 exs., same locality, soil extractions, 1986 (cAss); 34 exs., Lüneburger Heide, Schneverdingen, Pietzmoor, heathland with old heather, pitfall, 1992-1996, leg. Melber (cAss); 8 exs., Lüneburger Heide, Schneverdingen, Bockheber, heathland, pitfall, 1993-1994, leg. Melber (cAss); 6 exs., Lüneburger Heide, Schneverdingen, Tütsberg, grass island in sandy military training ground, pitfall, 1995-2001, leg. Melber (cAss); 6 exs., NE Gifhorn, Heiliger Hain, grassland, pitfall, 1986 (cAss); 4 exs., same data, but heathland, 1984-1987 (cAss); 36 exs., same locality, soil extractions, 1986 (cAss); 13 exs., N Gifhorn, Bokeler Heide, heathland, pitfall, 1985-1986 (cAss); 20 exs., N Gifhorn, Rössenbergheide, heathland, pitfall, 1986-1987 (cAss); 1 ex., ca. 30 km N Bremen, Garlstedter Heide, heathland, pitfall, 1985 (cAss); 1♀, Borkum, Grüne Stee, V.1938, leg. Struve (NHMW); 1♂, same data, but VII.1938 (NHMW); 4 exs., Meppen env., Hümmling, heathland, pitfall, 1986 (cAss); 1 ex., Wolfsburg env., Fallersleben, *Typha* vegetation, 1982, leg. Assing (cAss); 1 ex., Wendland, Maujahn, 28.VIII.1989, leg. Melber (cAss); 3 exs., Landkreis Osnabrück, Börstel, Hahlener Moor, 29.XII.1999, leg. Feldmann (cFel); 3 exs., Lüchow-Dannenberg, Pevestorf, 8.IX.1986, leg. Wunderle (cWun). Hessen: 1 ex. Marburg, Rauschenberg, 17.IV.1985, leg. Wunderle (cWun); 3 exs., Marburg, Bracht, flood debris, 28.IV.1984, leg. Wunderle (cWun); 1♂, locality illegible, 28.VIII.1902 (NHMW). Sachsen-Anhalt: 1♂, Schkopau, Lauch-Stichgraben, 30.V.1996, leg. Sprick (cAss). Thüringen: 1♀, locality illegible (NHMW). Bayern: 1♂, München, 24.X.1887 (NHMW); 2 exs., München 5.V.1886 (NHMW). Italy: Trentino-Alto Adige: 1♂, Val di Non (BZ), Lauregno: torbiera, 1750 m, 30.VII.1994, leg. Zanetti (cZan); 1♂, 1♀, Bleggio Sup. (TN), Passo Durone, 29.V.1977, leg. Zanetti (cZan); 1♀, Brez (TN), Palu Tremole, 23.VIII.1996, leg. Zanetti (cZan); 1♀, bank of Adige river, leg. Breit (NHMW). Lombardia: 2♂♂, 2♀♀ [1♀ macropterous], Ostiglia, Palude del Busatello (MN), at base of *Salix*, 12.III.1981, leg. Zanetti (cZan); 1♂, Soave (MN), *Carex*, 24.IV.1994, leg. Zanetti (cZan); 1♀, Soave (MN), palude d. Mincio, 31.III.1996, leg. Zanetti (cZan). Veneto: 1♂, Bovolone (VR), 24.IV.1978, leg. Sette (cZan); 3 exs., Isola della Scala, Pellegrina (VR), 4.IV.1980, leg. Zanetti (cZan); 6 exs., same data, but 3.II.1980 (cZan, cAss); 2♂♂, Pellegrina, 10.XI.1976, leg. Modena (cZan); 1♂, 1♀, Pellegrina, swamp, base of *Salix*, 26.II.1999, leg. Zanetti (cZan); 1♂, Cerea (VR), Palude Brusa, 21.III.2004, leg. Zanetti (cZan); 1♀, same data, but 17.I.1988 (cZan); 2♂♂, Belluno, Antole, 4.IV.1994, leg. Zanetti (cZan). Friuli-Venezia Giulia: 3 exs., Val Cellina, Claut [46°16'N, 12°31'], 600 m, 19.IV.1977, leg. Visentini (cZan); 1♂, 2♀♀, Udine, Majano, Biotopo Torbiera di Casasola, Torbiera, 160 m, *Carex*, 13.IV.2001, leg. Zanetti & Tagliapietra (cZan). Austria: Vorarlberg: 1♂, Silbertal, Gafluna, 1400 m, 10.V.1997, leg. Zanetti (cZan); 4 exs., Bodensee, NSG Rohrspitz, flood debris, 13.V.1999, leg. Wunderle (cWun). Salzburg: 2 exs., Bad Hofgastein, VII.1926 (NHMW); 1♀, Salzburg (NHMW). Oberösterreich: 1 ex., Oberlaussa, leg. Franz (NHMW); 1♂, 1♀, Sarleinsbach, 11.IV.1914 (NHMW, cAss); 1♀, Schoberstein, leg. Petz (NHMW); 1♂, Linz, 3.V.1916, leg. Kloiber (NHMW). Niederösterreich/ Wien: 5 exs. [partly teneral], Arbesbach, 1.-13.VII.1951, leg. Schubert (NHMW); 3 exs., Wechselgebirge, 1889-1889, leg.

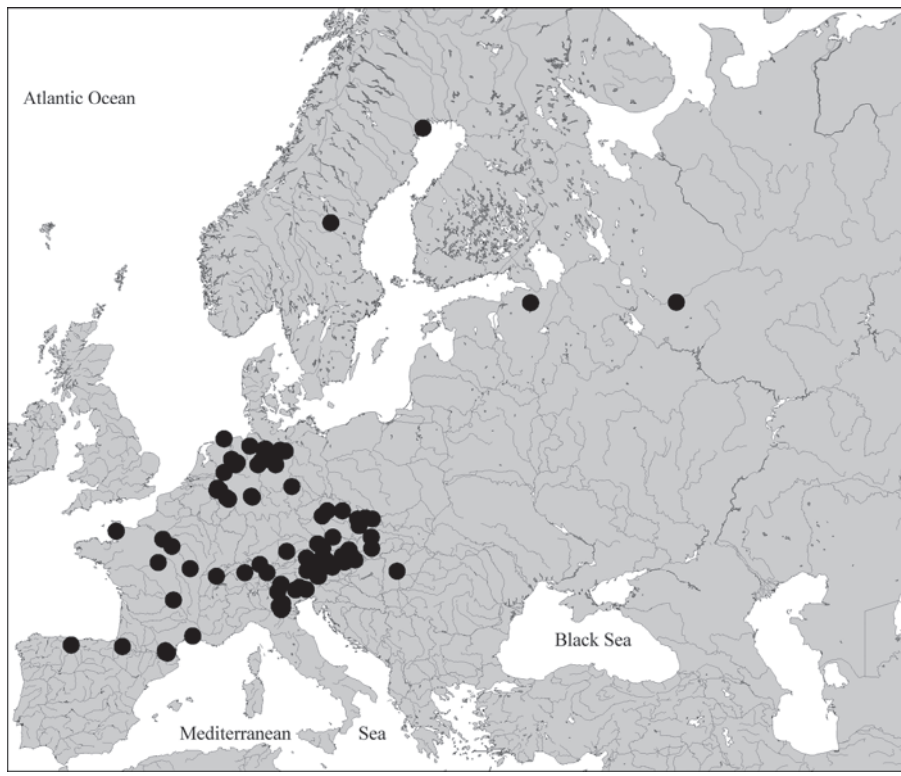
Ganglbauer (NHMW); 1♀, Kirchberg am Wechsel, 1885, leg. Ganglbauer (NHMW); 3♀♀, Moosbrunn, Jesuitenbach, leg. Beier & Franz (NHMW); 1♀, Unterberg (NHMW); 1♀, Ebreichsdorf, leg. Franz & Beier (NHMW); 2♂♂, W Heidenreichstein, Brand, leg. Franz (NHMW, cAss); 1♂, Kranichberg am Wechsel, 1895, leg. Schuster (NHMW); 2♂♂, Kirchberg am Wechsel, 1895, leg. Schuster (NHMW); 1♂, Rodaun near Wien (cAss); 1♂, 2♀♀, Wien env. (NHMW). S t e i e r m a r k : 1♂, Tamischbachturm, [47°36'N, 14°41'E], 1893 (NHMW); 1♀, Seitz im Liesingtal, leg. Franz (NHMW); 4♀♀, Admont, leg. Franz (NHMW); 1♂, Kaiserau near Admont, leg. Franz (cAss); 1♀, Niedere Tauern, Donnersbachtal, leg. Franz (NHMW); 1♀, Niedere Tauern, Kl. Sölk, leg. Franz (NHMW). K ä r n t e n : 1♂, 1♀, Gurktaler Alpen, St. Lorenzen, 1500 m, 25.VII.1991, leg. Assing (cAss); 1♂, same locality, 23.VII.1996, leg. Assing (cAss); 1♂, Gurktaler Alpen, Hochrindl, 1600 m, pasture, under stone, 26.VII.1991, leg. Assing (cAss). B u r g e n l a n d : 1♂, 1♀, Neusiedler See (NHMW). Czech Republic: 1♀, Hradec Králové (NHMW); 2♂♂, Brandýs n. L., leg. Skalitzky (NHMW); 3♂♂, Dobřichowice, leg. Rodt (NHMW, cAss); 1♂, Prostějov, leg. Zoufal (NHMW); 1♀, Moravia, Dvorce ["Hof"], leg. Scheerpeltz (NHMW); 2♂♂, Dvorce, leg. Scheerpeltz (NHMW, cAss); 1♂, 3♀♀, Úsov ["Mähr-Auss."/"Aussee"], leg. Wingelmüller (NHMW); 1♀, Klimkovice ["Königsberg"], VII.1903, leg. Wagner (NHMW). Slovakia: 1♂, 1♀, Trenčín, leg. Kocsi (NHMW); 2♂♂, Nitra, leg. Zoufal (NHMW, cAss). Hungaria: 1♂, Pest, 1907 (NHMW). Russian Federation: 1♀, St. Petersburg env., Gatshina distr., Poselok, mixed forest, 31.VIII.2002, leg. Koval (cTro); 1♂, Tambovskaya oblast, Rasskasovo, 52.40°N, 41.49°E, swamp, 5.VI.1987, leg. Pütz (cAss); 6 exs., N Vladivostok, Tales, "Seitengraben des Perwaja Rjetschka", 1918-1920, leg. Frieb (NHMW, cAss); 1 ex., Vladivostok, leg. Graeser (NHMW); 3 exs., E-Sajan mts., "Quellgebiet des Irkut", 1891, leg. Leder (NHMW, cAss); 1♂, "Solovetsk", leg. Levander (NHMW). Canada: 6 exs., Nova Scotia, Hants Co., Upper Rawdon, highbush blueberry field, 26.VIII.2008, leg. Renkema (NSMNH, cAss); 1♂, New Brunswick, Albert, Mary´s Point, flotsam in coastal dunes, 23.VIII.2003, leg. Majka (NSMNH). Locality not specified, not identified, or ambiguous: 1♂, 3 exs., "Brandis, Travnik" (NHMW); 1♂, "Fetropol", leg. Kolenati (NHMW). Probably mislabelled: 1♂, "Val de Ropa, Corfu, Woerz" (NHMW).

C o m m e n t : *Ochthephilum fracticorne* is reliably distinguished from similar congeners only based on the shape of the internal structures of the aedeagus (Figs 38-39); the ventral process (Figs 36-37) is similar to that of various other species. In mature adults, the coloration of the forebody is always blackish.

Map 6: Distribution of *Ochthephilum fracticorne* (PAYKULL) in the Palaearctic region, based on revised records.

The original description of *O. hokkaidense* ITO 2006 is based on several syntypes from various localities in Hokkaido, Japan. Based on the details indicated in the description

and on the illustrations of the habitus and the male sexual characters, the type material of this name is conspecific with *O. fracticorne*. However, since the types were not examined, a formal synonymisation is here refrained from.



Map 7: Distribution of *Ochthephilum fracticorne* (PAYKULL) in Europe, based on revised records.

D i s t r i b u t i o n : *Ochthephilum fracticorne* has had a long history of misinterpretation. Confirmed and reliable records are known only from Scandinavia, Great Britain, Central Europe, northern Spain, France, northern Italy, Hungary, Russia eastwards to the Russian Far East, Canada, and probably also northern Japan (see comment above), but are absent from southern Europe (central southern Iberian peninsula, central and southern Italy, Balkans), North Africa, Turkey, and the Caucasus region (Maps 6-7). Consequently, its presence in Turkey is most unlikely and there is little doubt that older records from this country (see SMETANA 2004) are based on misidentifications. The same applies to the recent records by ANLAŞ & ÇEVIK (2008); a specimen identified by one of the authors as *O. fracticorne* was examined and refers to *Homaeotarsus chaudoirii* HOCHHUTH 1851. Similarly, all previous records from Middle Asia (see comments on the distribution of *O. brevispinosum*) and the Eastern Palaearctic region are doubtful and require confirmation. The distribution pattern in the Palaearctic region and the presence in North America suggest that *O. fracticorne* is a Holarctic species.

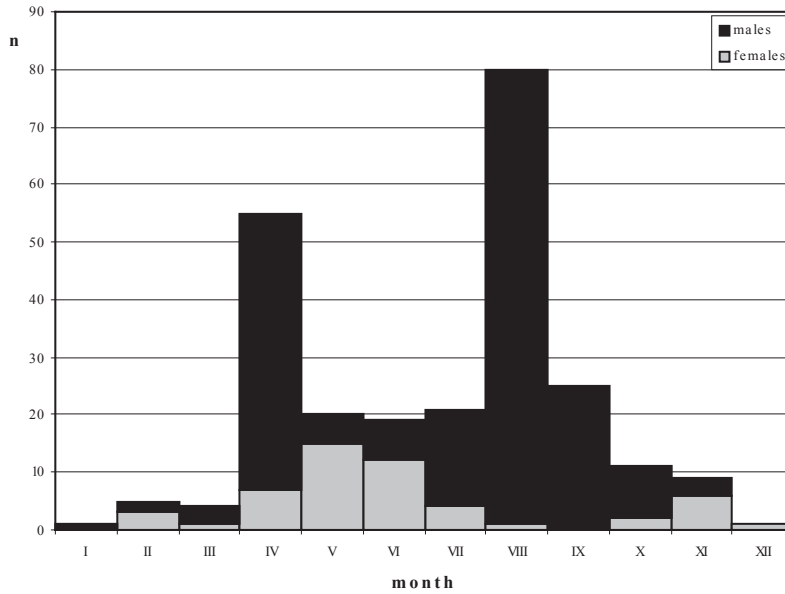


Fig. 52: *Ochthephilum fracticorne*: seasonal activity of males (black bars) and females (grey bars) based on full-year pitfall trap studies in heathlands and grasslands in northern Germany.

B i o n o m i c s : *Ochthephilum fracticorne* is a hygrophilous species and found in – usually cold – forested and open biotopes such as bogs (often in *Sphagnum*), swamps, grassland (moist pastures, meadows, etc.), moist heathlands, and in the moist leaf litter of forests, often near ditches, ponds, and other wet places. Adult beetles are present throughout the year, but active especially in spring (maximum in April) and in summer, with a maximum in August (Fig. 52). Remarkably, males are distinctly more active on the ground than females for most of the year. In field studies conducted in northern Germany throughout the year (soil extractions regularly taken at two-week intervals and pitfall traps exposed from January through December), the sex ratio (males: females) in pitfall traps was 3.71 (n = 259), whereas in soil extractions it was 0.87 (n = 202) (Fig. 53). Males are more active than females in April and during the period from July through October, whereas females are more active in May-June and November. Females with eggs in the ovaries were observed in November, first half of December, and from February through June (soil extractions), and in May-June (pitfall traps), suggesting that oviposition generally takes place in spring, possibly also in late autumn. (Since the soil samples were heat-extracted, it is not quite certain if the eggs in the ovaries of the females from the soil samples developed before or during the extraction procedure.) Larvae were observed in the soil samples from February through August and in the pitfall traps from June through August, with an overall maximum from the second half of May to the middle of July. Teneral adults were found from July through the first half of September. These data suggest that females are mainly active during the oviposition period, whereas the epigeic activity of the males is mainly stimulated by their search for females.

Like many other staphylinids, *O. fracticorne* is wing-dimorphic. However, specimens with fully developed hind wings are much rarer than the brachypterous morph. Of a total of 350 specimens (219 males, 131 females), whose hind wings were examined, only five specimens are fully winged. Remarkably, these five macropterous specimens are all females, suggesting that the wing dimorphism may be sex-related. In brachypterous beetles, the hind wings are – at most – only slightly longer than the elytra.

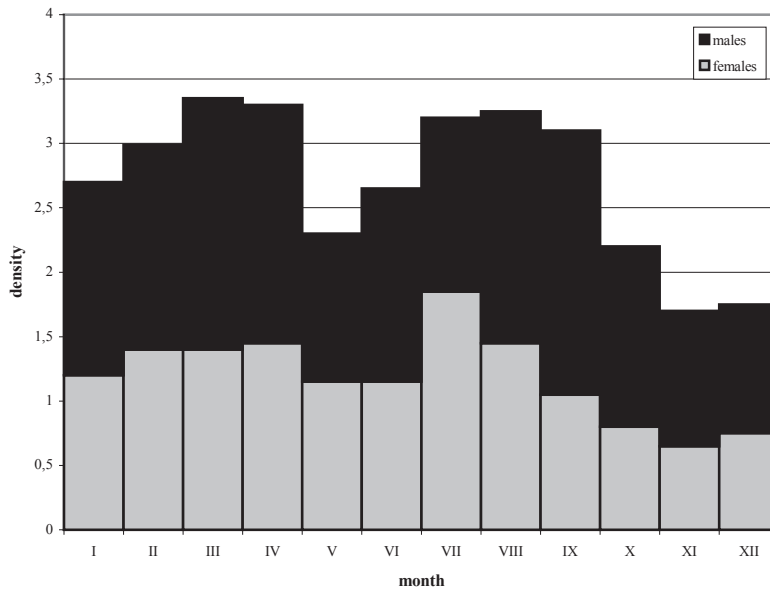


Fig. 53: *Ochthephilum fracticorne*: pooled seasonal density (specimens per m^2) of males (black bars) and females (grey bars) based on full-year soil extractions in heathlands and grasslands in northern Germany.

4. Revised catalogue of the *Ochthephilum* species of the Western Palaearctic and Middle Asia

C o m m e n t : The distribution indicated below is based on reliable records and examined material. Doubtful records are omitted.

species	revised distribution
besucheti (BORDONI 1980)	Caspian: NE-Turkey, Georgia, N-Iran
brevipenne (MULSANT & REY 1861) = *algiricum* (FAGEL 1967), **nov.syn.**	Holo-Mediterranean: N-Africa (Tunisia, Algeria, Morocco), Iberian peninsula, France, Switzerland, Italy, Hungary, Ukraine, Balkans (Albania, Bulgaria, Croatia, Greece, Macedonia)
brevispinosum **nov.sp.**	Middle Asia: Kyrgyzstan

species	revised distribution
collare (REITTER 1884)	Ponto-Mediterranean: Balkans (Albania, Bosnia-Hergovina, Bulgaria, Croatia, Greece, Slovenia), Georgia, Ukraine, Romania, Hungary, Italy, Central Europe, southern Sweden, France (Corsica)
egregium (REITTER 1884)	Azerbaijan
flavum (KASHCHEEV 1985)	Middle Asia: Kazakhstan
fracticorne (PAYKULL 1800) = *furcaticorne* (GRIMMER 1841) = *pallidum* (GISTEL 1857) = *brachelytratum* (KORGE 1968) ? = *hokkaidense* ITO 2008	Holarctic: N-Spain, France, N-Italy, Central Europe, Hungary, Scandinavia, Baltic countries, Russia, Japan? (records from other regions require confirmation); North America
hamatum ASSING in press	SW-Turkey
jacquelinii (BOIELDIEU 1859)	Atlanto-Mediterranean: NW-Africa (Morocco, Algeria, Tunisia, Libya?), Spain, Portugal, France
permutatum **nov.sp.**	Caspian: Azerbaijan, N-Iran
turkestanicum (KORGE 1968) = *arabicum* (COIFFAIT 1979) = *gracile* (COIFFAIT 1975) = *loebli* (BORDONI 1980)	S-Italy, Ukraine, Eastern Mediterranean (Bulgaria, Greece, Macedonia, Turkey, Cyprus, Israel, Lebanon), Caucasus region (Georgia, Azerbaijan), Saudi Arabia, Iran, Afghanistan, Tajikistan, Uzbekistan, Kazakhstan

5. Revised checklist of the *Ochthephilum* species of Turkey

C o m m e n t : Only species whose presence in Turkey has been confirmed are listed in the catalogue below. Previous records of *O. fracticorne* are most likely based on mis-identifications (see section on *O. fracticorne*). Also, the exclusively female-based record of *O. besucheti* from Istanbul (BORDONI 1980) is omitted.

species	Turkish provinces	references
besucheti (BORDONI 1980)	Samsun, Ordu, Erzurum, Erzincan	BORDONI (1980); present paper
hamatum ASSING in press	Muğla	ASSING (in press)
turkestanicum (KORGE 1968)	Muğla, Antalya, Mersin, Antakya, Kayseri, Birecik, Kars	ASSING (2008b), present paper

6. Key to the Western Palaearctic and Middle Asian species of *Ochthephilum*

Since, in many regions of the Western Palaearctic region and Middle Asia, *Ochthephilum* species are extremely difficult to distinguish based on external characters alone, the key exclusively relies on the male sexual characters. For additional illustrations of the male genitalia see HOZMAN (1985), ZANETTI (1980), and ASSING (in press). Note that the key does not account for *O. flavum*, since no material of this species has become available for study. For illustrations of the male primary and secondary sexual characters of this species see KASHCHEEV (1985).

1 Aedeagus with only one apical sclerotised structure of characteristic shape in the internal sac (Figs 43-45). Widespread from southern Italy and Greece to the Arabian peninsula and Middle Asia. ..... ***O. turkestanicum*** (KORGE)

\- Aedeagus with two apical sclerotised structures of different shape in the internal sac. 2

2 Apex of aedeagus modified, not simply flat, somewhat separated from remainder of ventral sclerotised part of aedeagus (Figs 40, 46, 48-51) 3

\- Apex of aedeagus simply flat, of more or less triangular shape, not separated from remainder of ventral sclerotised part of aedeagus 4

3 Apex of aedeagus conspicuously acute, distinctly and obliquely projecting from ventral sclerotised part of aedeagus in lateral view (Fig. 40). Internal structures as in Fig. 41. Pale-coloured species, at least the pronotum reddish to reddish-brown. NW-Africa, Iberian peninsula, S-France. ..... ***O. jacquelinii*** (BOIELDIEU)

\- Apex of aedeagus not conspicuously acute and not distinctly projecting from ventral sclerotised part of aedeagus in lateral view (Figs 48-49), in ventral view of characteristic shape (Figs 46, 50-51). Internal structures as in Fig. 47. Forebody in most specimens uniformly blackish. Widespread in the Mediterranean, from NW-Africa to Greece, northwards to Switzerland and northern Italy. ..... ***O. brevipenne*** (MULSANT & REY)

4 Internal sac of aedeagus apically with a hook-like sclerotised structure and a long, more or less straight sclerotised structure; basal sclerotised structure relatively short (Figs 38-39); ventral aspect of aedeagus as in Figs 36-37. Posterior margin of tergite VIII not concave in the middle. Northern Palaearctic region, from northern Spain to the Russian Far East, probably also in Japan; North America. ..... ***O. fracticorne*** (PAYKULL)

\- Apical structures often bent or curved, but not distinctly hook-like; long apical structure shorter. 5

5 Larger sclerotised apical structure in the internal sac of the aedeagus large and almost angled (Fig. 32). SW-Anatolia. ..... ***O. hamatum*** ASSING

\- Larger sclerotised apical structure in the internal sac of the aedeagus smaller, less massive, and smoothly curved. Unknown from SW-Anatolia. 6

6 Internal sac of aedeagus with the short apical sclerotised structure very small, only approximately half as long as the longer apical structure; dorso-apical lamellate structure reduced, barely visible; apical 3/4 of basal sclerotised structure remarkably straight (Figs 20-21). Posterior margin of tergite VIII concave in the middle. Azerbaijan..... ***O. egregium*** (REITTER)

\- Internal sac of aedeagus with the short apical sclerotised structure longer, distinctly more than half as long as the longer apical structure; dorso-apical lamellate structure well-developed; basal sclerotised structure more or less curved. 7

7 Internal sclerotised structures all rather short (Fig. 25). Posterior margin of tergite VIII smoothly convex. Kyrgyzstan. ..... ***O. brevispinosum*** nov.sp.

\- Internal sclerotised structures longer. Unknown from Middle Asia. 8

8 Internal sac of aedeagus with the longer apical sclerotised structure slender and strongly curved (Fig. 23). Tergite VIII posteriorly not concave in the middle. NE-Anatolia, Caucasus region, N-Iran. ..... ***O. besucheti*** (BORDONI)

- Internal sac of aedeagus with the longer apical sclerotised structure stouter and less strongly curved. Posterior margin of tergite VIII in the middle truncate to distinctly concave.. 9

9 Internal sac of aedeagus with the shorter apical sclerotised structure apically slender and acute, and with longer apical structure less strongly curved apically; basal structure longer and more slender (Figs 14-19). Widespread, from the Balkans and the Caucasus region to southern Scandinavia.. .....***O. collare*** (REITTER)

- Internal sac of aedeagus with the shorter apical sclerotised structure stout and short, and with the longer apical structure more strongly curved apically; basal structure shorter and stout (Fig. 24). Azerbaijan, NW-Iran..... ***O. permutatum*** nov.sp.

7. On the identity of *Cryptobium koltzei* EPPELSHEIM

***Homaeotarsus koltzei* (EPPELSHEIM 1886), nov.comb.** (Figs 54-57)

Cryptobium koltzei EPPELSHEIM 1886: 40 f.

T y p e m a t e r i a l e x a m i n e d : Holotype ♀: "Ch / 12. / Koltzei mihi, Chabarofka, Amur, ded. Koltze / collect. Eppelsh. / Koltzei Epp., Deutsch. ent. Zt. 1886. p. 40. / Typus / Holotypus ♀ Cryptobium koltzei Eppelsheim, rev. V. Assing 2008 / Homaeotarsus koltzei (Eppelsheim), det. V. Assing 2008 (NHMW).

A d d i t i o n a l m a t e r i a l e x a m i n e d : Russia: 1♀, Primorskiy Kray, Ussuri region, 28.V.1958 (NHMW); 1♂, Primorskiy Kray, Ussuriysk ["Nikolsk Ussurijsk"; 43°47'N, 131°54'E], leg. Mandl (cAss). China: 1♂, Harbin, Manshukuo, 5.VIII.1939, leg. Alin (NHMW).

C o m m e n t : The original description is based on "ein einziges ♀ von Chabarofka" (EPPELSHEIM 1886). An examination of the type specimen and additional material from the collections of the NHMW revealed that the species refers to the genus *Homaeotarsus* HOCHHUTH 1851. The male sexual characters are illustated in Figs 54-57.

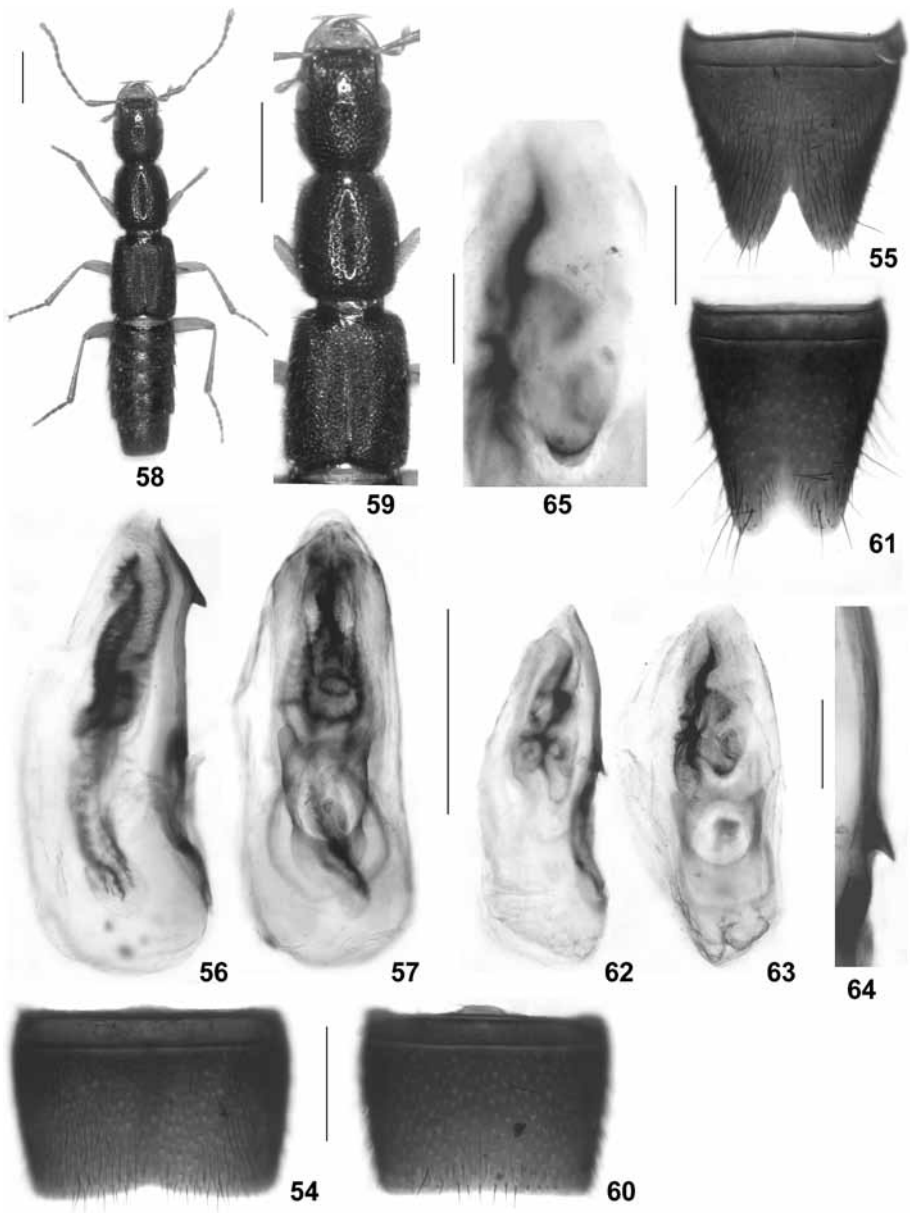
According to SMETANA (2004), *H. koltzei* is widespread and has been reported from eastern Siberia, the Russian Far East, North Corea, Mongolia, and the Northwest Territory of China.

***Homaeotarsus denticulatus* nov.sp.** (Figs 58-65)

T y p e m a t e r i a l : Holotype ♂: "♂ / Nordwestl. / China / Chinkiang / Col. Reitter / koltzei / Emmerich Reitter vend III.1943 / ex coll. Scheerpeltz / Holotypus ♂ *Homaeotarsus* sp.n., det. V. Assing 2008" (NHMW). Paratypes: 2♀♀: same data as holotype (NHMW, cAss).

D e s c r i p t i o n : Body length 8.0-9.0 mm. Habitus as in Fig. 58. Coloration: Body uniformly blackish; legs dark yellowish; antennae dark-brown to brown, with the apical three antennnomeres yellowish-brown.

Head approximately 1.3 times as long as wide and shaped as in Fig. 59; punctation coarse and very dense, in median dorsal area (between eyes) less dense; interstices in median dorsal area without microsculpture; eyes approximately half as long as postocular region in dorsal view.



Figs 54-65: *Homaeotarsus koltzei* (EPPELSHEIM) (**54-57**) and *H. denticulatus* nov.sp., holotype (**58-65**): (**54, 60**) male sternite VII; (**55, 61**) male sternite VIII; (**56-57, 62-63**) aedeagus in lateral and in ventral view; (**58**) habitus; (**59**) forebody; (**64**) base of ventral process of aedeagus in lateral view; (**65**) ventral process of aedeagus in ventral view. Scale bars: 58-59: 1.0 mm; 54-57, 60-63: 0.5 mm; 64-65: 0.1 mm.

Pronotum approximately 1.2 times as long as wide, widest in the middle; lateral margins weakly concave or almost straight in dorsal view; punctation distinctly finer and somewhat less dense than that of head; interstices without microsculpture, on average slightly narrower than diameter of punctures; midline impunctate (Fig. 59).

Elytra long, at suture approximately 0.95 times as long as pronotum; punctation slightly finer than that of pronotum and very dense (paratypes) to extremely dense and partly confluent (holotype) (Fig. 59).

Abdomen approximately as wide as elytra or slightly narrower, widest at segments V-VI; punctation fine and dense; interstices with shallow microsculpture and somewhat glossy; posterior margin of tergite VII with palisade fringe.

♂: sternite VII with almost truncate posterior margin (Fig. 60); posterior incision of sternite VIII not very deep, broadly triangular (Fig. 61); aedeagus small, 0.83 mm long, with small, but distinct tooth-like process at base of ventral process (best seen in lateral view) (Figs 62-65).

Etymology: The name (Latin, adjective) refers to the distinctive tooth at the base of the ventral process of the aedeagus.

Comparative notes: The genus *Homaeotarsus* is currently represented in the Palaearctic region by eleven species (ASSING 2008a; SMETANA 2004). Based on the descriptions and available illustrations of the male primary and secondary sexual characters, *H. denticulatus* is characterised particularly by the shape of the aedeagus and the male sternite VII. In addition, it is distinguished from the geograpically closest Eastern Palaearctic congeners – *H. humeralis* (CAMERON 1924), *H. kumaonensis* (CHAMPION 1921), *H. marginatus* (MOTSCHULSKY 1858), *H. bernhaueri* (CAMERON 1924) – by the uniformly blackish coloration of the forebody. In the similarly coloured *H. rosti*, the male sternite VII has a narrow and deep posterior incision. For illustrations of the male abdomen of the compared Eastern Palaearctic species and of the aedeagi of the Western Palaearctic species see CAMERON (1931) and COIFFAIT (1984), respectively.

In external morphology, the new species is practically indistinguishable from *H. koltzei*, with which it was confounded in the collection of the NHMW. Both species are, however, easily separated based on the shape of the male sternite VII (*H. koltzei*: posterior margin distinctly concave in the middle), the shape of the male sternite VIII (*H. koltzei*: posterior excision much deeper), and the completely different morphology of the aedeagus (see Figs 54-57).

Distribution and bionomics: The type material was collected in Xinjiang province, northwestern China. Additional data are not available.

Acknowledgements

I am most grateful to the colleagues indicated in the material section for the loan of material under their care. Benedikt Feldmann (Münster) proof-read the manuscript.

Zusammenfassung

Typen und weiteres Material westpaläarktischer und mittelasiatischer Arten der Gattung *Ochthephilum* STEPHENS 1829 werden revidiert. *Ochthephilum permutatum* nov.sp. (Aser-

baidshan), bisher mit *O. egregium* (REITTER 1884) konfundiert, und *O. brevispinosum* nov.sp. (Kirgistan) werden beschrieben und abgebildet. Die Aedoeagi der westpaläarktischen und mittelasiatischen *Ochthephilum*-Arten, insbesondere ihre Innenstrukturen und ihre intraspezifische Variabilität werden untersucht und abgebildet. *Cryptobium algiricum* FAGEL 1967, nov.syn., wird mit *Ochthephilum brevipenne* (MULSANT & REY 1861) synonymisiert. Für *Cryptobium collare* REITTER 1884, *C. egregium* REITTER 1884 und *C. brevipenne* MULSANT & REY 1861 werden Lectotypen designiert. Die Verbreitung der Arten wird diskutiert; weitere Nachweise, darunter mehrere Erstnachweise, werden gemeldet. Auf der Grundlage ganzjähriger Freilanduntersuchungen (Bodenfallen, Kempson-Extraktionen) in Norddeutschland wird der Lebenszyklus von *O. fracticorne* (PAYKULL 1800) – einschließlich der saisonalen Aktivität und der saisonalen Dichte von Männchen und Weibchen, Geschlechterverhältnis, der Phänologie der Larven und der Oviposition – untersucht. Die Art ist flügeldimorph; die macroptere Morphe ist allerdings sehr selten und bislang wurden ausschließlich geflügelte Weibchen bekannt. Ein Katalog der *Ochthephilum*-Arten der Westpaläarktis und Mittelasiens, ein Katalog der aus der Türkei sicher nachgewiesenen Arten und eine Bestimmungstabelle werden erstellt. Die revidierte Verbreitung von neun Arten wird anhand von Karten illustriert. Die bisher *Ochthephilum* zugeordnete Art *Cryptobium koltzei* EPPELSHEIM 1886 wird in die Gattung *Homaeotarsus* HOCHHUTH 1851 transferiert. Die männlichen Geschlechtsmerkmale der Art werden abgebildet. *Homaeotarsus denticulatus* nov.sp. (NW-China), bislang mit *H. koltzei* konfundiert, wird beschrieben und abgebildet.

References

ANLAŞ S. & I.E. ÇEVIK (2008): Faunistic studies on Paederinae (Coleoptera, Staphylinidae) in Manisa province, Turkey. — Munis Entomology & Zoology **3**: 665-674.

ASSING V. (1993): Zur Bionomie von *Xantholinus rhenanus* COIFF. und anderen bodenbewohnenden Xantholininen (Col., Staphylinidae) in Nordwestdeutschland. — Zoologische Jahrbücher, Abteilung Systematik, Geographie und Biologie der Tiere **120**: 13-38, Jena.

ASSING V. (2007): New species and additional records of Paederinae and Aleocharinae from Iran (Coleoptera, Staphylinidae). — Deutsche Entomologische Zeitschrift **54** (2): 179-193.

ASSING V. (2008a): On the Cryptobiina of the Arabian peninsula (Coleoptera: Staphylinidae: Paederinae). — Zootaxa **1892**: 53-64.

ASSING V. (2008b): On the taxonomy and zoogeography of some Palaearctic Paederinae and Xantholinini (Coleoptera: Staphylinidae). — Linzer biologische Beiträge **40** (2): 1237-1294.

ASSING V. (in press): On the Staphylinidae of Turkey. VI. Twelve new species and additional records (Coleoptera). — Koleopterologische Rundschau **79** (2009).

ASSING V. & P. WUNDERLE (2001): On the Staphylinidae of Greece. II. New species and new records from central and northern Greece (Insecta: Coleoptera). — Linzer biologische Beiträge **33** (1): 103-136.

BORDONI A. (1980): Studi sui Paederinae. VI. Nuove specie del mediterraneo orientale. — Atti della Società italiana di Scienze naturali e del Museo civico di Storia naturale di Milano **121**: 75-82.

CAMERON M. (1931): The fauna of British India including Ceylon and Burma. Coleoptera. Staphylinidae. Volume 2. — Taylor, London: viii + 1-257.

CICERONI A. & A. ZANETTI (1995): Paederinae e Staphylininae (generi 079-147), pp. 19-33. — In: CICERONI A., PUTHZ V. & A. ZANETTI, Coleoptera, Polyphaga III (Staphylinidae). Checklist delle specie della fauna italiana, Calderini Bologna, Fasc. **48**: 1-65.

COIFFAIT H. (1984): Coléoptères Staphylinidae de la région paléarctique occidentale. V. Sous famille Paederinae Tribu Paederini 2, Sous famille Euaesthetinae. — Supplément à la Nouvelle Revue d'Entomologie **13** (4): 1-424.

EPPELSHEIM E. (1886): Neue Staphylinen vom Amur. — Deutsche Entomologische Zeitschrift **30**: 33-46.

FAGEL G. (1967): Contribution a la connaissance des Staphylinideae. XCVII. – Les *Cryptobium* de la région paléarctique occidentale. — Bulletin Institut royal des Sciences naturelles de Belgique **43** (9): 1-7.

HOZMAN P. (1985): Beitrag zur Kenntnis westpaläarktischer Arten der Gattung *Cryptobium* MANNHEIM [sic] (Coleoptera, Staphylinidae). — Revue suisse de Zoologie **92**: 311-322.

ITO T. (2008): Notes on the species of Staphylinidae (Coleoptera) from Japan XIII. Three new species of the genus *Ochthephilum* STEPHENS from Japan. — The Entomological Review of Japan **63**: 27-33.

KASHCHEEV V. (1985): Novye vidy stafilinid (Coleoptera, Stapyhlinidae) iz Iugo-Vostochnogo Kazakhstana. — Izvestiia Akademii Kazakhskoi SSR (Seriia Biologicheskaia) **1985**: 49-53.

MULSANT E. & C. REY (1861): Description de quelques coléoptères nouveaux ou peu connus. — Opuscules Entomologiques **12**: 139-188.

SMETANA A. (2004): Subfamily Paederinae FLEMING, 1821. — In: LÖBL I. & A. SMETANA (eds), Catalogue of Palaearctic Coleoptera. Volume 2. Hydrophiloidea – Histeroidea – Staphylinoidea. Apollo Books, Stenstrup: 579-624.

TRONQUET M. (2006): Catalogue iconographique des coléoptères des Pyrénées-Orientales. Volume I (édition revue et augmentée). Staphylinidae. — Revue de l'Association Roussillonnaise d'Entomologie **15** (Supplément): 1-127 + 78 plates.

WATANABE Y. (2008): A new apterous *Ochthephilum* (Coleoptera, Staphylinidae) from the island of Okinawa-hontô of the Ryukyus, Japan. — Elytra, Tokyo **36**: 199-203.

ZANETTI A. (1980): Contributo alla conoscenza delle specie italiane del genere *Cryptobium* MANNH., con note sulle specie europee e del Caucaso. — Lavori - Società Veneziana di Scienze Naturali **5**: 31-41.

Author´s address: Dr. Volker ASSING
Gabelsbergerstr. 2
D-30163 Hannover, Germany
E-mail: vassing.hann@t-online.de